SOL PLAATJE
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nGAP

NEXT GENERATION OF ACADEMICS PROGRAMME

scholars research writings

2017/18

Professor Yunus Ballim

Preface

The question of the development of the next generation of academics and scholars has long troubled the minds of leaders in the higher education sector and in the Ministry of Education in post-apartheid South Africa. In addition to the more general concern about the "ageing professoriate", a particular focus has been the need to grow the presence of women and black academics at the senior levels.

During Dr Nzimande's term as Minister in the Department of Higher Education and Training (DHET), the idea was conceived to set funds aside in the annual budget of the DHET to respond specifically to this concern. Here was the beginning of the Next Generation of Academics Programme, or nGAP as it has become known.

When the first call for applications to support emerging academics from nGAP funds was made in 2014, the new Sol Plaatje University (SPU) participated enthusiastically and funding for our first two nGAP scholars was approved. Since then, SPU has participated in each call for applications and we have been successful in securing a modest (by national standards) but significant (for SPU) number of nGAP scholars at our university.

During 2017, with a cohort of six nGAP scholars at a 4-year-old SPU, we recognised the need to share and consolidate our mentoring practices for such emerging academics while at the same time allowing the nGAP scholars to interact in mutually supportive ways. This led to the idea of a writing retreat involving the nGAP scholars and their mentors in focused and engaged activities aimed at developing academic writing abilities. This was acknowledged as an important development need for emerging academics as the early writing experience is generally an intimidating activity. Indeed, all the mentors recalled how unnerving it was to realise that writing for publication is to expose one's thoughts to scrutiny by "strangers".

The diversity of academic disciplines of the nGAP scholars and the mentors provided very useful counter-points for the different traditions and styles of scholarly writing. This ranged from creative writing to accounting to fundamental mathematical sciences. The nGAP scholars got a sense of the differences but also the commonalities in the form of "making an argument" through scholarly writing.

The collection of articles in this publication represents the output of the first SPU nGAP writing retreat. We expect that this will become a regular feature of the SPU approach to developing the next generation of academics, scholars and intellectuals in the higher education sector generally. On behalf of the mentors and nGAP scholars, I wish to express our particular thanks to Prof "JJ" Sense for the coincidence of his academic visit to SPU and for his valuable contributions to our discussions at the writing retreat.

Professor Yunus Ballim

VICE-CHANCELLOR OF SOL PLAATJE UNIVERSITY

AUGUST 2018

Words from the editors

When the vice-chancellor and principal of Sol Plaatje University, Professor Yunus Ballim first proposed the idea of a writing retreat it was very well accepted by all the nGap scholars. Life that has become a mere existence from one deadline to the next, making one a bolt in a machine that never ceases running. A retreat was to offer a well needed and possibly a deserved break from all that, a space not only to write but also to reflect.

Professor Erna du Toit and Mr Sabata Mokae chose a game lodge in the North West Province, about one and half hour journey from Kimberley towards Johannesburg. At the N12 highway off-ramp, we ventured onto a dirt road that ended when we entered the gates of a game farm. It was quiet. The air was clean. The birds, large and small, were so free one could immediately fathom the adage "as free as a bird".

The Vice-Chancellor started the programme with a presentation on academic writing. This was followed by each of the nGAP (Next Generation of Academics Programme) academics telling us about their postgraduate research as well as what they would be writing during the retreat. Topics ranged from human remains to statistics and race relations in post-apartheid Setswana novels.

At the time of the retreat some of the nGap scholars were in the middle of writing an English novella, writing an article, conducting research, or completing a thesis …. so, among the nGAP academics who were there to write and be guided by seasoned academics, each scholar was busy with their own creative piece.

The mentors Dr. Edward Dakora, Professors Erna du Toit, Yunus Ballim and Jean-Jacques Sené, a US-based Senegalese scholar mentored the scholars for the weekend. It was expected of the nGgap scholars would write an article that would then be published in a SPU's nGAP publication. One-on-one sessions with the mentors were arranged for the scholars to talk about the writing processes.

During one of the intervals, the group went on a game drive to see mainly antelope and small game. Another one to look at the stars and listen to the Vice-Chancellor telling us about the galaxy; a braai and conversations about work, life and everything in-between. We laughed, we wrote, and we reflected. One could borrow from Latin, if it is not an exaggeration: "veni, vidi, vici". We came, we saw, and we conquered.

The idea of a writing retreat was a good one; more so when it is well-coordinated with specific outcomes like getting our nGAP scholars to write academic papers. Each scholar returned from the retreat with a draft paper to be finalised for inclusion in the SPU nGAP publication. The one good thing about the first SPU nGAP writing retreat was the gathering of the scholars and their mentors who all come from very different academic backgrounds. These include Anthropology, Creating writing, Education, Entrepreneurship, Paleontology and Statistics (data analytics).

It was interesting to observe the cross-pollination of ideas across these diverse disciplines and how that possibly enriched the knowledge of individual scholars. The retreat allowed time and space to think, reflect, write, consult and to discuss specific issues pertaining to the stages of the nGAP scholars in their academic lives. The writing retreat also improved the confidence levels of the nGAP scholars and instilled a degree of collegiality among them. The SPU nGAP writing retreat is intended to become an important part of its nGAP programme. The papers that come out this retreat are presented in this SPU nGAP publication, which will be a unique feature of our annual nGAP report.

Doctor Edward Dakora,
Professor Erna du Toit,
Mister Sabata Moake

AUGUST 2018

Contributors

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A Bone to pick: Curation vs Repatriation
Understanding the contestation of curation and repatriation of human remains in South African museums

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Practice makes perfect: A WID approach for Human Resource Management Honours students at a South African university

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A comparative application on obesity data.*

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Stable carbon isotope analyses for reconstructing paleo-diet of mega-herbivores and paleo-environment of the Kathu region in South Africa.

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"*After Hours*"

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Itumeleng Masiteng

A BONE TO PICK:
CURATION VS REPATRIATION UNDERSTANDING THE CONTESTATION OF
CURATION AND REPATRIATION OF HUMAN REMAINS IN
SOUTH AFRICAN MUSEUMS

ABSTRACT

The article is a product of a current Masters research project by the author. The article explores the dynamics of curation and repatriation of human remains in two South African museums. The main research aims of this research project it is to re-examine whether the practice of human remains curation has a place in a post democratic South African museums. However, this research project provides an opportunity to investigate the role and significance of repatriation in museums. The role of Colonialism and Apartheid played in the acquisition of human remains in museums is highlighted. Legislative implications facing museums with human remains in their collections are investigated. The preliminary findings of the Masters research project by the author are highlighted by this article.

INTRODUCTION

South Africa has a long museum history that had a main focus of tangible heritage that was of European origin that had biased intentions. Consciously, museums chose to be platforms for the history of colonization as well as apartheid through their exhibitions and to some extent, their collections. During the colonization and apartheid period in South Africa, museums were in the forefront of not paying attention to the history of black people (Kayster 2010:2, Mdanda S.2016:47). Western cultures were held in higher esteem than African cultures, thus museums were places of exclusivity. Colonization brought identity distortions, obscurity and perpetuating of cultural heritage stereotypes, all in the guise of ethnographical and racial science research in places like museums (Dubow S. 2006:2-4, Sleeper-Smith 2009:107-108). The history of colonisation and apartheid form a very important backdrop for this research article because the majority of the human remains in South African museums were collected during those periods. It is a conundrum that human remains were collected at a time where African cultures were seen as inferior to Western cultures other than equals (Kayster 2010:2, Meskell 2005:72).

For the purpose of this article the aim is to try to understand the contestation of curation and repatriation of human remains in South African museums. The objective of this article it is to re-examine whether the practice of human remains curation in museums has a place in a post-democratic South Africa. This article will provide an opportunity to analyse the role and significance of repatriation in museums. There are a number of questions that need to be addressed by museums in their day-to-day handling of human remains within their collections. These questions concern the responsibility of curators, and the way museums should care and treat human remains (Calugay 2015:2). In a post-democratic South Africa what is apparent with this issue is that South African museums have not completely transformed. Why is it that museums still house human remains that were collected with racist intentions and questionable means? In tackling the issue of curation and repatriation in museums, Ditsong National Museum of Cultural History in Pretoria and the McGregor Museum in Kimberley will be the focus due to their long and colourful history of collecting and curating human remains. What makes this research project unique is that the majority of written literature about human remains tends to be more about repatriation or reburials than curation (Alberti et al 2009: 133). For example, the most written about repatriation it is the Saartjie Bartmaan in 2002 from France back to South Africa (Davi 2002:1, Cassman et al 2007:153), the Mapungubwe repatriation in 2007 (Nienaber et al 2008:164-165). Then there was Klaas and Trooi Pienaar's repatriated from Vienna, Austria they were illegally exhumed by, Dr Rudolph Poch in the Northern Cape back in 1909, and shipped to Austria. The Pienaars were used for medical as well as racial studies in Austria and their repatriation only took place in 2012 (Rassool 2014:1).

RESEARCH DESIGN & METHODOLOGY

The author being an archaeologist always looks at things with a chronological point of view. Hence, that informs the research design and methodology for this research project. Establishing a time line for the human remains collection at both museums is vital because that will put things into context of when and how they were acquired. A time line will help create a historical track record of the human remains.

Basically, this will mean the following:

- This project is collection based research that is exploratory in nature with the use of primary sources such as acquisition registers, cataloguing forms, accession forms and archival material from the two museums.
- The research will be augmented by looking at existing literature on curation and repatriation of human remains within museums.
- Analysis of the human remains policy
- Analysis of all human remains records with respect to provenance.
- Structured interviews with the curators and managers to ascertain they views on repatriation and the future role of the museums.

RESEARCH RATIONALE

The controversy over the studying and curation of human remains in museums has historically been a tug of war between the interests of scientists and indigenous people (Morris 2008:1, Morris 2014:189, Jenkins2011:2). The tug of war is also underpinned by the somewhat lost identity of the human remains. The highly contested robust debate of human remains, as Morris puts it, their "spirituality", is an issue that is constantly brewing because the human remains are still there. However, this does focus on the main reasons why these remains were collected in the first place (Cassman 2007 et al:151). Human remains embody in them a permanence that crosses through time indirectly making the past so vividly in the present. However, emphasises is placed on that human remains do not have a singular meaning only but also contain multiple interpretations. Human remains are remnants of lived lives that had been full of intricacies and vibrant behaviours (Verdery 1999 :27-28).

Human remains carry a narrative that represents the person that was. In part, that is an identity. It is vital to acknowledge that human remains are remnants of that person, of what was left behind after death. In principle, human remains are representative of a "person" and he/she needs to be afforded some rights because of that. According to Bienkowski (2006:7), death will always co-exist with the body from consciousness. Hence, the consideration of human remains as persons because of the integration of the remains with the community. Besides that, bones are able to tell you about a person's dietary habits and lifestyle (Morris 2014:195, Verna 2011:13). In a way, who they were when they were alive. That recognition is

vital when it comes to determining identity. In the past identity of black people in South Africa was colonially ascribed through ethnic reformulations (Meskell 2005:72). It is on the premise of human remains are being seen as "persons" and how that denotes identity. Hence, a closer look is warranted to learn more about dynamics of repatriation and how curation takes place in museums.

RESEARCH AND POLICY PRACTISES

The two museums operate differently from one another when it comes to the way research is conducted. The McGregor museum has a moratorium that human remains that were collected pre-democracy for racial science will not be research upon they will be only passively curated. Overall the McGregor museum has a collections management policy in place that ensures ethical respectful care of human remains in their collections. However, McGregor strives to find new and better ways to deal with the human remains collection together with relevant stakeholders[1].

The Ditsong National museum of Cultural History has an open policy where the entire human remains collection even the ones that were collected pre-democracy for racial science can be researched upon on request for Masters and Doctoral studies. Permitting such research allows the museum to acquire new information that might aid with repatriation plans in the future if they get proper funding. This particular museum is also open to have better stakeholder engagements with ancestral indigenous communities pertaining to the human remains in their collections. Overall the Ditsong National museum of Cultural History has a collections management and a human remains policy in place that ensures ethical respectful care of human remains in their collections[2].

LEGISLATIVE IMPLICATIONS

Canada, Australia, USA, and New Zealand have dealt with Colonialism including South Africa and they all had to face the issue of disposition of human remains and that cuts across these countries (Seidemann 2004:546). Legislation in all the above mentioned countries made strides on the issue of human remains up to a point. However, legislation from USA, Australia and South Africa will be highlighted in this article to show the applications and implications of those Acts pertaining to the issue of curation and repatriation of human remains.

In the U.S.A. they have a specific piece of legislation that directly deals with repatriation or reburial in the best possible way. That act is called the Native American Graves Protection and Repatriation Act or commonly known as NAGPRA. Basically this act provides a process for museums and Federal agencies to return certain Native American cultural items including

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[1] Discussions with the curator of the Archaeology Collection at McGregor Museum Prof. David Morris.
[2] Discussions with the curator of the Archaeology Collection at Ditsong National Museum of Cultural History Mr. Frank Teichert.

human remains as well as grave goods, sacred objects, or objects of cultural significance. Initially when the NAGPRA came into existence there was some concern that a loss will occur of museum research pertaining to human remains. In a way the NAGPRA act was seen to deprive research science of vital sources of information by advocating reburial of human remains held in museums (Cassman et al 2007: 236, Fagan 2001:511, Rose et al. 1996:88-89).

In Australia they have the Aboriginal Cultural Heritage Act and the Torres Strait Islander Cultural Heritage Act of 1984(Cassman et al 2007:.228, Seidemann 2004:570.) However, the Aboriginal Cultural Heritage Act does focuses on giving proper recognition, protection and conservation of Aboriginal cultural heritage (Knell et al. 2007:251). This implies that Indigenous people legally are the main guardians and knowledge carriers of their own cultural heritage, with recognition of Aboriginal ownership of human remains, sacred materials and also cultural heritage removed from the land. Aboriginal and the Torres Strait Islander people who have familial linkages with human remains can seek ownership of these remains or chose to have the remains continue to be at that government institution/museum the two act make that possible. In Australia repatriation is aided legally hence it is more specific (Knell et al. 2007:251-252, Seidemann 2004:572).

The National Heritage Resources Act no.25 of 1999 (NHRA) is not adequate enough in addressing curation and repatriation of human remains in museums. Section 36 of the NHRA act itself focuses on the exhumation permit process of human remains. It is only section 41 of the NHRA act that talks to restitution (Seidemann 2004:565-566). The legislation on this point does not provide specific clarity when it comes to repatriation or reburial of human remains (Nienaber et al. 2008:164-165). This has left a loophole for museums, so that museums are the ones making decisions on access to and research on human remains in their collections (Morris 2014:194). At this point in time a draft was concluded on the "Policy Framework on the Repatriation of Heritage Resources" in 2011 it is yet to be approved.
Internationally the Vermillion Accord on human remains it is the bases of an agreement of cooperation and understanding when dealing with the issue of human remains. The 1989 Vermillion Accord on Human Remains that was adopted by the World Archaeological Congress it is basically a code of Ethics that needs to be adhered too. The accord has six points that talk about the respect for mortal remains of the dead; respect for the wishes of the dead where known; respect for the wishes of local communities, relatives, or guardians; respect for the scientific value of human remains; the need for negotiated agreements on the disposition of human remains; and the recognition of concerns held by various ethnic groups (Seidemann 2004:581-582).This accord is a good foundation for international repatriation to take place between different countries but it is not legislation.

REMARKS AND CONCLUSION

Museums in South Africa are underfunded and this has strained the recruitment of persons with the required expertise to look after specialised collections like human remains (Schuit et

al 2007:22). As a result, some human remains just continue to be curated only in museums. The other reason for research not taking place at all, is that some human remains were collected for Racial Science during colonisation so there is a lot of political controversy associated with them (Legassick & Rassool 2000:2). Presently, human remains collections in museums are expanding as a result of rescue excavations due to development taking place like construction of buildings or trenching for electrical cabling (Seally 2003:238). The human remains are often accidentally discovered during developments. If they are proven to be above 60 years, they are taken to museums as their national depositories according to the NHRA (Morris 2014:194).

The possibility of repatriation can aid museums in this country up to a point. On the other hand, to repatriate is not as simple as digging a hole in the ground and having a mass grave. It is far more complex than that. Leggasick and Rassool advocate that museums should conduct mass reburial of human remains because preserving human remains is no longer viable if the ethical need is to rebury (Leggasick & Rassool 2000:49). Repatriation is a process that can bring healing provided it is not selective and if the focus is not only on people involved with the liberation struggle in this country. According to Verna, repatriation means the physical return of something with cultural ties to the rightful owner, in this case, descendants (Verna 2011:3).

Around the world repatriation has become the buzz word within heritage circles due to previously marginalised communities acquiring some form of restitution or recognition. Repatriation can be a catalyst that yields recognition to re-imagining notions of identity within a broken past with its sacred symbolism. This would be a way for South African museums to be participants in the preservation of a particular culture by working together with indigenous communities
(Verna 2011:14).

Culturally as Africans human remains tend to stir up a lot of emotions because of their links to the ancestors. The need for respect for indigenous cultural, religious and traditional values were human remains are concerned is important that museums take cognisance of that (Morris 2008:1) (Morris 2014:189) (Jenkins2011:2). Firstly, to improve cultural attitudes the involvement of Indigenous communities as stakeholders is vital, secondly these communities need to be part of the dialogue and decision making when it comes to human remains also here South African museum collections. Real collaborative efforts are vital between the museums and indigenous communities to facilitate partnerships and constituencies (Verna 2011:12). Finally, it is time in this country where communities black and Khoi-San communities can influence the repatriation process (Nienaber et al 2008:169). That on its own raises a lot of questions and concerns about the human remains in museums that were collected early in the twentieth century, since they also deserve a dignified final outcome. It is never too late to correct this injustice in order to move positively forward as a country to finally bring an end to this gruesome chapter in our South African History. However, Government needs come to

the table to assist museums to radically transform from the past. Museums should be completely reflective of diversity of our country in an ethical respectful way. Firstly, it would be suggested that new reforms are needed on how museums are managed and funded. Secondly, the NHRA legislation needs revision because it is not specific enough, progressive and transformative when it comes to human remains. In conclusion with these recommendations or suggestions being implemented we can make positive in roads on curation and repatriation of human remains in South African museums.

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Laura Arnold

PRACTICE MAKES PERFECT:
A WID APPROACH FOR HUMAN RESOURCE MANAGEMENT HONOURS STUDENTS AT A SOUTH AFRICAN UNIVERSITY

ABSTRACT

There is a lack of research on Research on 'Writing in the Disciplines' (WID) programmes for postgraduate students, including in fields related to management. Human Resource Management Honours students at a South African university completed a research preparation module designed according to WID principles. This research explores how the developmental assignments, written as part of the module, prepared students who were writing in groups to submit their research reports. To determine if a group's writing had improved, the assignments from four groups were evaluated against the students' rubrics. The redrafted assignments met more of the marking rubrics' criteria. Since all group members were English as an additional language speakers, this approach might benefit postgraduate students in similar contexts. The findings suggest that the curriculum of similar modules should fulfil three criteria. Firstly, the module should sufficiently scaffold larger, more complex pieces of writing research. Secondly, it should consider different means of assessing qualitative and quantitative research projects that operate from different paradigms. Thirdly, the module should encourage supervisors, who are disciplinary experts, should learn how to teach their students to write in the discipline from support staff members working in the field of academic literacies.

INTRODUCTION

Universities that recognise how challenging academic writing can be offer undergraduate programmes that teach students how to write across an entire three or four-year curriculum (Russell, 1997). While this instruction may enable the students to write essays, research has found that undergraduate students receive little or no instruction into how to write up research in their discipline (Jackson, Meyer & Parkinson, 2006; Lombard & Kloppers, 2015). Thus, students entering into an Honours degree may find that their way of writing is no longer sufficient to meet the demands of the examiners. For instance, students who enter into an Honours degree may know how to reproduce existing knowledge in essay format, but might not know how to write in a way which shows that they have produced new knowledge in their discipline (Lander, 2002; Jackson et al. 2006). In addition, many South Africa students need to begin working immediately after their undergraduate degree to pay off student loans, and financially support family members. Many of these students only enrol in an Honours degree some years or decades after their undergraduate graduation. While all Honours students may need additional support to be able to become knowledge producers, mature Honours students will need even more support to reacquaint themselves with ways the in which knowledge is produced and valued in universities.

Although Honours students may need additional support in order to produce research writing in a particular discipline, relatively little is known about how such students should be taught to write for their discipline (Butler, 2007; Tobbell, O'Donnell & Zammit, 2010; Fergie, Beeke, McKenna & Creme, 2011). This research makes a contribution to the literature by examining how submitting components of an Honours research report multiple times, according to pre-determined criteria during a research preparation module, improved the final research report. The findings from this research could assist academic and support staff who want to develop a support module based on WID principles where students write preparatory assignments prior to submission of the final research report or minor dissertation.

The paper begins by presenting the central research question of this study, and providing an explanation of the different components of the research module. The literature review then discusses how Writing in the Disciplines (WID) and Genre Pedagogy can be used to develop students' research writing. An overview of how the research module was designed according to WID principles is then provided. The next section explains why this research made use of case study as a research design, and how the students' assignments were collected and analysed. The two main findings from this study are then presented. The study found that later drafts of the groups all managed to meet more of the research criteria, but that some of the groups' texts had used argument, language, and tone less effectively. Based on these findings, several ways in which the module could be improved in the future are suggested. The final section of the paper then summarises the key findings.

RESEARCH QUESTION

To what extent does writing developmental assignments, submitted as part of a research preparation module according to pre-determined criteria, improve the final Honours research report?

BACKGROUND

In 2007 the Higher Education Qualification Framework stipulated that in order to meet the National Qualification Level 8 descriptors Honours degrees should include a 30 credit research component (CHE, 2011). To comply with these requirements, and to prepare students to enter into the Master's programme, from 2015 the Batchelor of Commerce (B. Com) Human Resources (HR) Honours degree required students to submit a research project. The degree ran for two years, and students completed a year-long research preparation module in the first year of study that prepared them to submit their final research report. The cohort who registered for the degree in 2015 were the first cohort to complete the research module. This module was compulsory and carried the same amounts of credits as the other modules in the degree.

Students completed their research project and all the assignments in groups of three to five members, reducing supervisor load and allowing more students to be admitted into the degree. Measures were included in the module curriculum to ensure that each member of a group contributed to the assignments equally. At the end of the semester each student in the group completed an individual portfolio that described his or her unique contribution to each assignment. Each group also submitted a group portfolio, which was a consolidated report outlining how much each member of the group had contributed to a particular assignment. Students then signed that the information provided in the individual and group portfolio was an accurate representation of their contribution to the assignments. Supervisors used the individual and group portfolios to award higher marks or lower marks to group members based on the individual's contribution to the assignments.

Prior to the submission of several of the assignments students attended Academic Literacies tutorials where they were shown how to read and reproduce written conventions present in research articles and past students' research reports. I facilitated half of the tutorials in 2015, the other half were facilitated by a Postgraduate Writing Fellow (PGWF) from the university's Writing Centre, and all the tutorials in 2016. During two full-day 'writing-retreat' workshops each group discussed their writing with a PGWF before they submitted the proposal and research report. Academic staff in the department also reminded students several times during the module to make additional consultations with the PGWFs.

LITERATURE REVIEW

Writing in the Discipline (WID) is a writing philosophy that emphasises the importance of teaching students how to produce texts that meet the conventions of their discipline (Classen, 2012; Hathaway, 2015). It is important to teach students how to write for their discipline because the way in which disciplines value and share knowledge affects the way in which researchers write in the discipline. Thus, WID rejects the proposition that literacy is a set of skills that can be learnt in one context and easily transferred to different contexts (Wingate, 2006; Downs & Wardle, 2007; Lillis & Tuck, 2016).
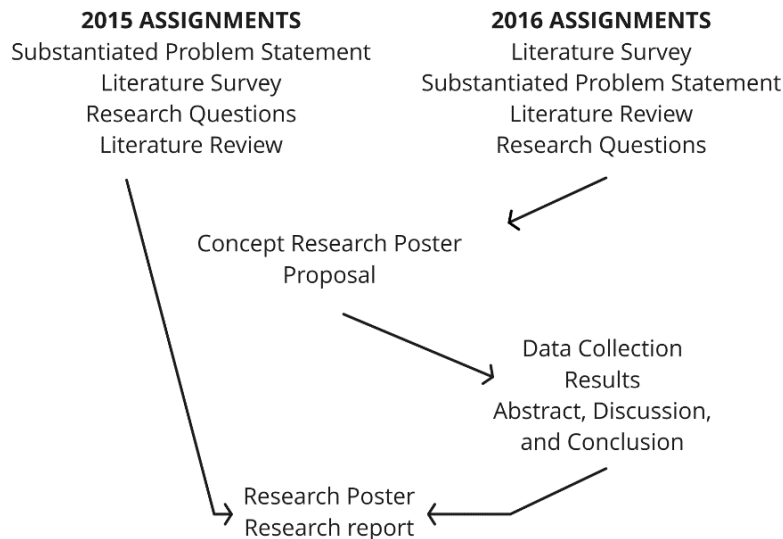
The WID approach argues that teaching students a set of generic writing tips, or strategies, will be less effective than a programme which considers the demands that different disciplines place upon their students. While a generic writing programme would not consider how postgraduate students write differently in the natural and social sciences, WID programmes for students in the natural and social sciences could instruct these students differently. Thus, a WID approach might inform students in the social sciences, especially students conducting qualitative research, that certain personal pronouns are used to show the reader how a text is constructed (Hyland, 2005). On the other hand, a WID programme for students in the natural, or hard sciences disciplines, where quantitative research is the norm, might show students how to write without using the personal pronoun to preserve the author's objectivity (Hyland, 2005). Thus, WID programmes for postgraduate students will need to teach students how to create knowledge claims in ways which are supported by the discipline's own epistemology and ontology.

Though there are many different ways of teaching students how to write for their disciplines, the module was informed by Genre Pedagogy and the concept of scaffolding. Scaffolding means that students complete smaller and less cognitively challenging, or more developmental tasks, before they complete larger, more complex tasks (Wood, Bruner, & Ross, 1976; Parkinson, Jackson, Kirkwood & Padaayachee, 2007; Grossman, 2009). It is an approach which has been used in the past to help students improve their academic reading and writing (Parkinson et al. 2007). Genre Pedagogy is an approach which stresses the importance of teaching students how the Genre, or hidden conventions, work within the text (Hyland, 2003; Clark, 2014). The rationale behind Genre Pedagogy is that once students understand how texts are constructed they will be better equipped to produce similar texts (Hyland, 2003; Clark, 2014).

DESIGN OF THE MODULE ACCORDING TO WID PRINCIPLES

The curriculum of the module was structured so that students completed a number of smaller assignments, which were components of the research report, before the submission of the final research report. Unlike most modules, where students only submit an assignment once, students submitted several assignments twice or thrice as the original assignment was

revised and included in the research proposal and/or research report. For more information on the content of each assignment, including how the assignments differed for the 2015 and 2016 cohorts, see the figure below:

2015 ASSIGNMENTS
Substantiated Problem Statement
Literature Survey
Research Questions
Literature Review

2016 ASSIGNMENTS
Literature Survey
Substantiated Problem Statement
Literature Review
Research Questions

Concept Research Poster
Proposal

Data Collection
Results
Abstract, Discussion,
and Conclusion

Research Poster
Research report

Prior to the submission of each assignment students received a detailed rubric that clearly explained the key components that should be included in each assignment. The supervisors graded each assignment according to the marking rubric. The rubrics were clearly tailored to the requirements of the discipline. Human Recourse Management (HRM) and various other management related fields expect their postgraduate students to produce research which contributes to the body of knowledge and is relevant for industry practioners (Goodier & Parkinson, 2005). Thus, when students submitted the draft and final Discussion Chapter the rubric clearly mentioned that the chapter should make a contribution to theory, or the body of knowledge, and to practice, namely, the HRM industry.

RESEARCH DESIGN AND METHODOLOGY

This was a qualitative case study focused on understanding a particular phenomenon: the role of the developmental assignments in preparing students to submit their research reports. In order to gain an in-depth understanding of the phenomenon, the assignments from four groups, which were submitted as part of the research preparation module in 2015 and 2016, were analysed. Though the analysis of the assignments was the main data source, additional insight was gained through focus group discussions with each of the four groups, and interviews with the groups' supervisors. The four groups had three supervisors, because two of the groups were supervised by the same supervisor.

Data collection

Data was collected once ethical permission for the study had been obtained from the Faculty of Education's Research Committee. In total I collected 36 of a possible 38 assignments. For more information, see the table below;

ASSESSMENT	GROUP
Substantiated Problem Statement	Group A, B, C, and D (4)
Literature Survey	Group A, B, C, and D (4)
Research Questions	Group A, C, and D (3)
Literature Review	Group A, B, C, and D (4)
Concept Research Design	Group A, C, and D (3)
Proposal	Group A, B, C and D (4)
Data Collection	Group C and D (2)
Results	Group C and D (2)
Abstract, Discussion, and Conclusion	Group C and D (2)
Research poster	Group A, B, C, and D (4)
Research report	Group A, B, C, and D (4)

Table 1: Assignments in the research preparation module

Goup A and B completed the module in 2015, and Group C and D completed the module in 2016. The Data Collection, Results, Abstract, Discussion, and Conclusion assignments became part of the module in 2016.

Data analysis

In order to analyse the students' assignments, I developed a grid for each assignment based on the criteria outlined in the marking rubric. I completed the grid by indicating whether a group's initial assignments, and the subsequent versions of the assignment, submitted as part of the proposal and/or research report, had met or had not met the criteria. An example grid is shown in
Appendix A.

Once the grid was completed, I wrote a summary of how each group's initial assignment, and subsequent versions of the assignment, had met or failed to meet the criteria. I used this summary to compare the progress that each group had made to the progress made by the other three groups. By comparing each group's progress against Butler's (2007) seven criteria for academic writing (Formality, Conciseness and exactness, Impersonality and objectivity,

Nominalization, Grammatical correctness, Coherent and cohesive (logical) structure and argument, Appropriate use of evidence) I gained additional insight into how each group's writing had developed over the course of the module.

FINDINGS

Conceptualising the research problem

Research suggests that students struggle to understand the discipline and the chosen research topic in enough depth to conceptualise a research problem (Davidson & Crateau, 1998; Rinto, Bowles-Terry & Santos, 2016). Students in 2016 completed the literature survey before the problem statement assignment, and I was interested to see if reviewing the literature had helped students to write better quality problem statements. I found that Group C and D, who completed the module in 2016, did write better initial problem statements than the groups who completed the module in 2015. This result indicates that students were better able to complete a problem statement after reading through the literature.

While the initial problem statements of the two groups in 2016 were more precise, all four groups managed to write well-substantiated problem statements in the research report. All four groups met the criteria outlined in the rubric as they were able to: explain the context of the research, provide evidence that research on the topic was lacking, and explain how this research would contribute to the 'knowledge gap'. The final problem statement may be of such a high quality because each group submitted the substantiated problem statements three times: Firstly, as an assignment, secondly as part of the research proposal, and thirdly as part of the final research report. Submitting the same assignment multiple times meant that the groups used their supervisor's feedback, which included a completed rubric showing where students had met and had not yet met the rubric's criteria, to revise the problem statement further. The process of revision enabled students who were initially unfamiliar with the process of knowledge production to write problem statements in the research that situated the research problem within the body of knowledge. The module was therefore able to acculturate students into the ways of knowing which should be displayed by knowledge producers. This finding supports previous research which has found that scaffolded support helps students to improve their academic reading and writing (Parkinson et al. 2007).

While the groups' problem statements were well written overall, one aspect which two of the groups could have improved upon was the formulation of the research objectives. Both Group C and D mentioned that an objective of their research was to distribute questionnaires, and one of Group C's objectives was to conduct a literature review. Both groups failed to understand that while distributing a questionnaire and completing a literature review do contribute to the study's objectives, they are not stand-alone objectives that should be mentioned at the start of the research report. In future, more clarification on how aspects of

the study such as, questionnaire distribution and writing the literature review differ from the objectives of the research should be provided.

Locating the study in a context

Postgraduate students must choose how to explain their study in relation to existing concepts and theories (Davidson & Crateau, 1998). As per the marking rubric, students were asked to write literature review assignments that discussed the key theory underpinning their concepts. However, each of the four groups' initial literature review assignments explained prior theories and concepts in a superficial way. For instance, Group B's use of bullet points to explain key concepts meant that the literature review resembled a list instead of a discussion. In addition, Group A, B, and C's use of numerous and/or repetitive sub-headings made the literature review structure unclear. The unclear literature review structure impeded the reader's ability to understand how the chosen theories and concepts related to the present study.

All groups substantially revised the literature review assignment before submission of the final research report. The groups revised the assignment in four main ways:

1. Removing theories and concepts which were not relevant to the study,
2. Providing definitions or clearer definitions of key concepts,
3. Revising the sequence of ideas-so that general information was presented before specific information, and
4. Renaming unclear headings.

The initial literature review indicated that the groups were unfamiliar with the literature on the topic, and had limited knowledge of how to write literature reviews. However, the final Literature Review Chapter of all four of the groups better integrated the ideas from multiple sources to introduce the reader to the current debates and controversies in the discipline (Davidson & Crateau, 1998). The quality of the final Literature Review Chapter suggests that students can improve the research report's Literature Review Chapter if they receive structured feedback on multiple drafts via a marking rubric. By redrafting the Literature Review Chapter multiple times, the four groups were able to improve the structure of the chapter and the chapter's main argument (Butler, 2007).

Confusion around pre-writing tasks

Literature survey assignment

Students completed a literature survey assignment by reviewing each article through the use of a grid. An example of the grid used to complete the assignment can be found on the next page:

No	Title of paper	Full reference	Problem *(Problem and list of key concepts investigated)	Context *(Definition of concepts & theories and arguments)	Methods	Findings *(Discussion, assumptions, and limitations)

Table 2: Example Literature Survey Grid Headings
* Criteria shown in brackets was added in 2016

Students wrote the literature survey assignment so that they would have enough knowledge from the literature to write the literature review assignment in 2015 and the problem statement assignment in 2016. One of the reasons why the literature survey failed to meet the criteria outlined in the rubric was because students often completed the assignment by merely transferring whole sentences from the articles into the literature survey grid. Since these sentences had been written as part of an article, the verbatim copying produced a disjointed literature survey grid that often failed to meet the criteria for the assignment outlined in the rubric.

Another reason why the literature surveys did not meet the marking rubric's criteria may have been the time allocated for the task. In 2015 the students had two weeks to survey 30 articles, and in 2016 the students had three weeks to survey 20 articles. Even though the groups in 2016 had more time and fewer articles to read, reading and summarizing 20 articles in three weeks was challenging for the students, because they had only recently begun the module. If academic staff in the department want students to engage deeply with the literature they could consider asking students to review fewer articles, or giving the students more time complete the assignment. Providing the students with more time or a reduced scope could benefit academically weaker groups, such as Group A, who struggled to read the articles at the level of understanding required. As the groups did not use many of the articles reviewed in the survey to construct their literature survey, it is doubtful whether they fully grasped the purpose of this task. Thus, academic and support staff need to ensure that during the course of the module students are explicitly told what the purpose of the literature survey is. If students produce better literature surveys they will have more relevant information with which to construct problem statements, and this could help groups to construct problem statement that are better substantiated by the available literature.

Literature review questions

At the end of the literature review assignment, students were required to submit several questions that their literature review would address. These questions were part of the planning phase because they would help students focus their literature review, and should not have been included in the final research report. Group D did not seem to understand this exercise, and included two of these planning questions, which asked whether their two constructs were reliable, as research questions. The two questions were not true research

questions as the group had already provided the answers to these questions in the literature review of their research report.

Group D did not understand that the purpose of the literature review questions was to guide the literature review, and that these questions should not be included in the final research report. Since students submitted these questions as part of the initial literature review, they may not have realised that these questions were actually part of the planning phase that occurs before the writing begins. In order to avoid this confusion in the future, academic and support need to clarify that the literature review questions help students to plan their work and do not need to be included in the final research report. This clarification will enable students to write research questions that relate to the main focus of the study in the final research report.

Differences in how qualitative and quantitative projects met the specified criteria

Three of the four groups provided a justification for the chosen research design and methods. It was significant that the three groups who provided a justification for the research design and methods had either conducted qualitative research, or a supervisor who is familiar with qualitative research. Groups conducting qualitative research may have justified their research design and methods choices, because qualitative research is less likely to view knowledge as neutral and more likely to acknowledge its constructed nature (Hyland, 2005). Thus, the two groups who conducted qualitative research were more likely to understand that they had to justify the choice of research design and methods for the reader's benefit. The third group conducted a quantitative research project, but because their supervisor was familiar with both qualitative and quantitative research they were able to provide a justification for the chosen research design and methods.

The one group (Group D) who did not provide a justification for choosing a particular research design or method conducted a quantitative research project under the guidance of a supervisor who specialises in quantitative research. Quantitative research is more likely to view the world as a series of self-evident, context neutral value propositions (Hyland, 2005). Thus, quantitative researchers are less likely to justify any choices that they have made, and it is not surprising that this group did not describe why they had chosen a particular design and set of methods. However, it is problematic that groups conducting quantitative research who are supervised by a specialist in quantitative research, will be less likely to meet certain criteria outlined in the research report's marking rubric. One way to manage this situation would be to adopt different criteria for qualitative and quantitative research projects. These criteria could be adopted if the majority of academic staff members agreed that qualitative and quantitative research projects have fundamentally different epistemologies and ontologies and should be graded differently.

However, if the academic staff members feel that both qualitative and quantitative researchers should be able to justify choices related to research design and methods, a

different approach would have to be taken. For instance, supervisors who only work with quantitative research could collaborate with supervisors who are familiar with qualitative research. To some extent there is already some collaboration between supervisors as academic staff in the department provided groups with feedback on their research proposals and research reports as a panel. The panel was supposed to inform each group how their research report could be improved. However, one of the supervisors described the panel as 'constrained', because supervisors were told, "Do not in any way imply that there are alternative ways, you confuse our students". While supervisors may be concerned about their students receiving conflicting advice, supervisors may also not want their students to receive feedback from other staff members. This is because some supervisors feel that if their students receive feedback from other sources this will undermine what they perceived to be a private relationship between themselves and their students (Manathunga, 2005).

As some supervisors might find it difficult to accept peer feedback in panel form, alternative peer-feedback methods could be used. For instance, supervisors who only supervise quantitative projects could review or mark their students' work in private with a colleague who is familiar with qualitative research. The role of the supervisor who is familiar with qualitative research would be to articulate why and how a group could justify particular research design and methodology choices. If either alternative criteria for quantitative groups, or peer collaboration between qualitative and quantitative supervisors was used, then all groups conducting quantitative research would be more likely to meet the criteria for the Research Design and Methodology Chapter.

Effect of additional scaffolding in 2016

In 2016 Group C and D drafted two versions of the Results Chapter, Discussion and Conclusion Chapter, and the Abstract, whereas in 2015 Group A and B only submitted a final version of these chapters and the Abstract. This gave the groups in 2016 an advantage over the groups in 2015. This advantage could be one of the reasons why the groups in 2016 wrote better Abstracts, Results Chapters, and Discussion and Conclusion Chapters. The groups in 2015 did not meet several of the key criteria stated in the rubric. For instance, the groups' Abstracts did not explain what the study's contribution to knowledge was. In addition, the groups' Results Chapters did not discuss how the findings addressed the research questions, and the Discussion and Conclusion Chapters did not adequately describe how the study had added to the body of knowledge, and could assist HRM practioners. In summary, without the additional opportunity to submit draft versions of the final chapters and abstracts, neither of the 2015 groups' final two chapters or Abstracts achieved their purpose.

Argumentation and language

By the end of the module, groups whose supervisor paid more attention to the ways in which language created meanings in text were better able to use language to create arguments in

text than groups whose supervisors focused more on content. Group C's supervisor was particularly focused on the students' writing, which was evident from the comment made by one of the members of the group, "He sort of focused more on the language and yah not necessarily the content." Consequently, this group was the only group to use personal pronouns for persuasive effect in the Discussion and Conclusion Chapter. In the final chapter, Group C addressed the reader directly through the use of the word we in the following sentence: "In conclusion of the results we can confidently accept all the research questions." The use of the first person pronoun in this sentence made the group's argument more explicit to the reader, and also directed the reader towards a particular reading of the text. Previous authors have also found that postgraduate students use relational markers, such as the word we, to persuade the reader to agree with their argument (Akbras, 2012; Lamberti, 2013). In contrast, the supervisor of Groups A and B explained that "I do not see it [the language]" and found it easier to provide feedback to the students on the content rather than the language used in text. Even though Group A and B had also completed a qualitative research project, where the use of personal pronouns is more acceptable, the two groups did not manage to use personal pronouns to persuade the reader to agree with their interpretation of the research.

All the groups were exposed to tutorials and received advise from the PGWFs, but the group whose supervisor was willing and able to offer advice on language matters developed their ability to argue the most. The way in which the module is designed and the different types of expertise that the role players have, means that supervisors, tutors, and PGWFs improve the students writing in different ways. The tutor is expected to teach tutorials which help students understand the conventions of a specific genre, for instance the Abstract, but he or she may not know how Abstracts are constructed in the discipline. The PGWFs, like many consultants working at Writing Centres, are trained to ask the students questions to help them reflect on their own writing and ultimately decide how they should improve their writing (Leibowitz, 2013). Supervisors as disciplinary experts and the arbiter of the students' marks are best placed to advise students on whether or not their writing displays mastery of the content domain and meets the expected criteria (Leibowitz, 2013). All postgraduate students are expected to construct arguments in text that are appropriate in the discipline. However, the supervisor who found it difficult to see the language, along with many other supervisors, may have internalised the disciplinary conventions; therefore, rendering them invisible (Jacobs, 2007). In such instances, support staff, who work in the field of academic literacies, can help supervisors to articulate for themselves and their students how language is used to convey meaning in their disciplines (Jacobs, 2007; McKay & Simpson, 2013).

While supervisors as disciplinary experts should be involved in teaching their students how to write in the discipline, students also valued the feedback that they received from the academic literacies tutor and the Postgraduate Writing Fellows. A student from Group C found that the Writing Centre helped them to understand their research problem, "I think we already

realised what our problem was when we went to the Writing Centre. That's where they actually unpacked it and then it actually made sense you know everything just made sense".

This was a very valuable contribution, because unless postgraduate students understand what they are researching it is unlikely that they will be able to argue why their research is needed and how their findings have made a contribution to the field. Research by Leibowitz (2016) has also shown that postgraduate students appreciate the availability of writing consultants who work at Writing Centres, and their ability to provide dialogical and non-judgmental feedback. It was therefore highly problematic that only the supervisors and I were available after hours. Most of the Honours students worked full-time and found that it was a struggle to arrange consultations with the PGWFs during office hours. Though PGWFs offered email consultations, the dialogical nature of the feedback was lost, and one supervisor commented that the email feedback was 'very generic'. At present part-time students at the university, who must already balance work and their studies, are further disadvantaged by the lack of access to writing consultants after hours. Universities that expect their part time postgraduate students to make use of the support services, such as the Writing Centre, need to make these services available after hours.

The ability to argue is only one feature of academic writing, academic texts are also meant to use language precisely (Butler, 2007). While each group tended to express their ideas more succinctly over time, some of the words in the final research report were used incorrectly. For instance, Group D said that they had to test the 'portability' of the questionnaires instead of their reliability and validity.   All the students in the module were English as additional language speakers, and during a tutorial several admitted that they wanted their texts to sound impressive. Future cohorts may be less likely to choose words that merely sound impressive, if the module emphasises the importance of using language accurately to convey particular meanings in academic texts.

Coherent language is only one marker of a well-written academic text. Academic texts should also be written in an "objective tone" (Canagarajah & Lee, 2015: 90). In the Discussion and Conclusion Chapter Group D strayed from the expected tone in the following sentence: "This is a stern warning to business [SIC] that they should prevent psychological contract breach at all cost". The tone of the sentence makes Group D seem more like advocates of a particular cause than postgraduate students, because researchers generally do not use emotive language to argue their point. Instead researchers urge the reader to adopt a particular stance based on the strength of the findings. If academic staff in the department decide that students should not sound like advocates, then the module should show students how the implication of the study for HRM practioners in industry can be emphasised without resorting to the use of emotive language.

Another aspect of tone is the balance between the use of tentative language, or hedges, and the use of language which conveys certainty, called boosters (Lamberti, 2013). All groups used

both hedges and boosters, but Group D used too many hedges, and used the word may seven times in the Abstract alone. The overuse of the word may, particularly in a quantitative research project, made the group seem uncertain about how credible the study's findings were. Academic staff in the department and support staff will have to decide how students should be taught to use an appropriate mix of boosters and hedges during the module.

CONCLUSION

The process of using supervisor feedback to submit multiple drafts of the same text was beneficial to the students, who were all English as an additional language speakers. The texts generally became less verbose as ideas were expressed in simpler and shorter sentences. The formulation of the problem statement and the structure of the literature review also improved, which indicated that the students had been able to read, interpret, and synthesis the literature on the topic. However, some groups did not understand the purpose of the two pre-writing tasks, the literature survey and the literature review questions. One way of helping students to understand the purpose of these tasks would be to emphasise that writing is a process and that certain tasks, including these two tasks, are completed before any actual writing takes place (Murray, 1972).

Compared to groups who completed the module in 2015, the groups in 2016 completed an additional three assignments prior to the submission of the research report. Students were required to complete these assignments in order to prepare them to write the Abstract, Results Chapter, and the Discussion and Conclusion Chapter. After analysing the assignments, it was clear that the Abstract and final two chapters of the research reports submitted in 2016 met more of the criteria in the rubric than the comparative sections of the research reports submitted in 2015. Thus, one of the ways in which WID programmes can ensure that students are able to complete larger research texts is to provide students with assignments that prepare them to complete each sub-section of the main text.

The group whose research project was quantitative did not meet certain criteria outlined in the marking rubric for the research report. Though the marking rubric specified that all groups should justify their research design and methods, this group did not explain why they had chosen a particular research design and method. As quantitative researchers generally do not make their research design and method explicit, similar programmes will need to decide if quantitative and qualitative projects should be assessed differently. Alternatively, supervisors operating from a quantitative paradigm could learn from supervisors who are familiar with qualitative research how and why researchers provide appropriate justifications for methodological choices.

The group who learned to argue the most effectively had a supervisor who was very concerned with how the group expressed themselves through their writing. The fact that the other groups did not learn to argue as effectively shows that this module may have relied too

heavily on part-time tutors and PGWFs to provide the students with advice on writing research reports. Since support staff are rarely experts in the discipline, supervisors are best placed to teach students how to create arguments in texts which will be acceptable in their disciplines. The best way to give supervisors the tools to teach their students how to write in their discipline is to partner them with support staff who specialise in the field of academic literacies. The support staff's function is to help supervisors draw on their tacit knowledge so that they can now see how meaning is created in the discipline, and find ways to teach their students how to decode disciplinary conventions.

The Writing in the Disciplines Approach focuses on teaching students how to write for their particular discipline, or disciplines. The value of this approach is that it teaches students how to write texts that will be acceptable to members of a disciplinary community, including examiners and journal reviewers. Staff who want to teach students how to write in their disciplines need to ensure that the curriculum is informed by a WID approach. In this module the assignment criteria were aligned to the conventions of the discipline as each assignment rubric outlined how students could produce a section or chapter of a HRM research report. For instance, the rubric for the Discussion Chapter clearly stated that in addition to a theoretical contribution the students also had state what the practical significance of the findings were from Human Resources mangers in industry.

Another central WID tenant is that students should be well supported to produce complex texts. This is why the final research report was scaffolded, and students submitted smaller assignments and multiple revisions of the same assignment prior to the research report. University staff who want to implement a similar WID programme should provide students with sufficient scaffolding before they are required to submit large, complex tasks. Any criteria used to assess the pre-tasks or assignments must adequately reflect the disciplinary conventions that students are expected to reproduce in texts. In addition, the separate role of the academic staff and support staff, and the "interactional strategies" which these staff will use to collaborate with each other need to be carefully mapped (Leibowitz, 2013: 38). Ideally, support staff with an academic literacies background can help the curriculum designers and supervisors make any instruction given to students on their writing more explicit.

In summary, this study found that a research preparation module designed according to a WID approach could benefited a group of Human Resource Management Honours students. The findings from this study also suggest that universities should ensure that WID programmes for postgraduate students should 1) provide students with adequate scaffolding, 2) assess qualitative and quantitative research projects differently, and 3) ensure that supervisors should learn how to teach their students to write from academic literacies specialists. The analysed assignments were from English as an additional language (EAL) Honours students; therefore, these findings are particularly applicable to supervisors and support staff working with EAL students conducting a limited scope project, such as an Honours project, or a minor dissertation Master's degree.

Limitations

I had initially planned to analyse only the assignments that had been developed under the guidance of a single supervisor in both 2015 and 2016. Unfortunately, the person who supervised the two groups in 2015 was a contract lecturer and did not lecture the students in 2016. This meant that I had to compare the two groups who completed the module in 2015 to two groups who were supervised by different supervisors in 2016. The fact that the supervisors of the groups were different did add some interesting variety to the study. However, it was impossible to tell how much of the variation in the way in which the assignments had been written occurred because the groups in 2015 and 2016 had been supervised differently. Future studies on similar phenomenon should try to ensure that all the texts are produced under the direction of the same supervisor.

I did not collect the marked rubrics or the written feedback which supervisors gave to their students. It would have been interesting to note how students used their supervisor's feedback to re-write a text. Of particular interest to me would be the ways in which the supervisor's feedback was understood and misunderstood.

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Appendix A: Example of grid used to assess the students' assignments

ASSIGNMENT: SUBSTANTIATED PROBLEM STATEMENT					
2016 Criterion	An appropriate title is formulated	Proper introduction to the subject under investigation	Description of the context is clear	Clear evidence that research will lead to new knowledge	Evidence relevant to the problem is identified
2015 Criterion		Introduce the subject under investigation	Context clearly stated	Research problem is substantiated body of knowledge (gap in knowledge)	
Group A- Assignment	Yes	Yes	No	No	Yes
Group A-Proposal	Yes	Yes	Yes	Yes	Yes
Group A-Research Report					

Galaletsang Gail Motlhaudi

BUSINESS PRACTICES AND CORPORATE ENTREPRENEURSHIP AS IMPETUSES FOR SME GROWTH

ABSTRACT

South Africa's bleak economic state has resulted in high unemployment rates and high poverty levels. SME establishment has been touted as a means to help curb these difficult economic times, however, SMEs have high failure rates. Therefore, this study purposed to explore business practices and corporate entrepreneurship (CE) as impetuses for SME growth. Literature clarified that the two concepts, business practices and CE, are not the same, however they lead to the same outcome of enhanced SME growth, hence the primary objective of this article is to explore the combined implementation of business practices and CE as impetuses for SME growth. This study seeks to contribute to the body of knowledge by determining which business practices SME owners and managers currently engage in and which business practices can help enhance SME growth; examining which dimensions of CE can enhance SME growth; and evaluating the relationship between business practices and SME growth, CE and SME growth and the interrelationship between specific business practices and CE dimensions and its impact on SME growth in the South African context. A quantitative approach was used by way of a survey using a well-structured questionnaire as an instrument. The sample selection incorporated the population and sample size of (n=250) SME owners and managers in Kimberley, Northern Cape. The study identified a combination business practice dimensions which are Human Resources Management practices, Performance Management practices, Change Management practices, Risk Management practices, Marketing practices and Networking practices; and CE dimensions which are Innovation, Risk taking propensity and Pro-activeness and the findings showed a medium to strong association between the respondents' view of business practices, CE and SME growth. A Multiple Regression Test conducted reiterates that this association by respondents did not occur by chance.

KEY WORDS: Business practices, Corporate entrepreneurship, SME growth, Quantitative research

1. BACKGROUND

SMEs make a significant contribution to the success of every economy as they create employment opportunities in society. Scholars (Dobbs & Hamilton, 2007) recognised that SME growth is one of the key drivers of employment, economic development and wealth creation in all countries across the world. Moreover, SME growth is an important source of job creation and is therefore look upon as a valuable measure of entrepreneurial success (Edelman, Brush, Manolova & Greene, 2010). Nonetheless, in the South African context studies (Fatoki, 2013; Smit & Watkins, 2012), observed that irrespective of their noteworthy contributions to the country's economy, SMEs in South Africa do not grow. Neneh and Smit (2013) reported that only a small portion of SMEs in South Africa exhibit noteworthy growth potential and contribute to the job creation; as such the remaining majority of SMEs are incapable of reaping the full benefits of SME growth. Additionally, other studies (Neneh & Van Zyl, 2012; Machirori, 2012; Fatoki & Garwe 2010) have indicated that SMEs in South African are beleaguered with minimal entrepreneurial activity and poor performance rates. Seleetse (2012) also established that South African SMEs fail within the first year of establishment thus contributing to the increasing unemployment rate. Researchers (Herrington & Kew, 2013) are of the view that limited SME growth in South Africa together with high failure rates limit the influence that SMEs have on the high unemployment rates which in turn forms a negative perception regarding the feasibility and viability of entrepreneurship as a career option. This then makes the need to enhance SME growth in South Africa very crucial.

2. PROBLEM DEFINITION AND OBJECTIVES

2.1   Problem Definition

SMEs are looked to as the vital vehicle to address challenges of sustainable economic growth and economic development, job creation and equitable distribution of income and wealth. However, SMEs in South Africa do not grow and this situation is not only peculiar to South Africa but is also common in several parts of the globe. The lack of SME growth in South Africa has limited the impact these businesses have on the South African economy with respect to wealth creation, employment, and economic development. As a means to cope with these challenges, it is important that SMEs cultivate a culture of entrepreneurship and nurture entrepreneurial activity in all operations of the firm so as to compete successfully. This can be achieved through SME owners and managers engaging in relevant business practices and encouraging CE. As such, this study seeks to identify which business practices and CE dimensions can assist SME owners and managers to enhance SME growth. Having an understanding of business practices will provide a clear framework on the various types of business practices and CE dimensions that SME owners and managers engage in and which business practices and CE dimensions can essentially enhance the growth of SMEs in South Africa.

2.2 Objectives

2.2.1 Primary Objectives
- To determine which business practices and CE dimensions can enhance SME growth.

2.2.2 Secondary objectives
- Ascertain the determinants of SME growth
- Verify which key business practices can enhance CE
- Determine which dimensions of CE SMEs engage in
- Establish a conceptual framework showing the relationship between business practices and CE as initiatives to enhance SME growth

3. THEORETICAL FOUNDATION

In this study, the concept of SME growth has been linked closely to the "Penrose's theory of the growth of the firm" which speaks of a "collection of (productive) physical and human resources" interconnected by their complementary productive services specific to the firm's coherent administrative organisation (Penrose, 1995). Penrose (1995) argues that this distinctive combination of resources, principally the firm's current human resources, provides both an incentive to grow and a limit to the rate of growth for the firm.

In order to understand the dynamics of the Penrosean growth, it is important to have a clear understanding of how these resources interact with the firm's administrative organisation to enlarge and contract its 'productive opportunity'. The firm's productive opportunity is essentially made up of all the productive possibilities that its entrepreneurs identify and can exploit (Penrose, 1959:31). The growth or decline of a firm is directly linked to the expansion or contraction of its productive opportunity. Penrose continues to explain that the elementary components of the firm's productive opportunity are the resources that can be organised and coordinated for the benefit of the firm, such as those embedded in the firm and those made available by the firm's external environment. The perception of new opportunities for a firm is highly dependent on the quality of 'entrepreneurial judgment', which is defined as the ability to determine new ways of dealing with known problems or new combinations of given knowledge (Penrose, 1959:41). This concept of entrepreneurial judgment used by Penrose is largely consistent with the concept of CE used in this study, which refers to the process where a firm engages in diversification by means of internal development. This type of diversification necessitates new resource combinations to expand the firm's activities (Burgleman, 1984). Guth and Ginsberg (1990:5) state that CE incorporates two types of phenomena, namely: 1) the establishment of new businesses within existing firms and 2) the transformation of firms by the renewal of key ideas. This concept of CE, which has its focal point on capatalising on human resources to generate new ideas to assist with

firm growth, relates back to Penrose's first factor of "collection of (productive) physical and human resources" (Penrose, 1995) which also narrates the growth of a firm.

The second factor of administrative organisation, emphasised by Penrose, relates back to the degree to which the firm's resources are marshaled to produce mutually enhancing services which reflect the ways in which the firm's administrative structure, values and incentives link these and other resources comprehensibly in the minds of the firm's employees. This Penrosean second factor of administrative organisation is linked to this study's concept of business practices which refers to the day to day operations of the firm that are frequently looked to as the roadmap to help the firm to move towards its stipulated goals (Neneh & Van Zyl, 2012; Masurel, Montfort & Lentink, 2003). Gamini de Alwis and Senathiraja (2003:119) expand on this definition by affirming that business practices incorporate different means of incorporating business values into processes so as to achieve the set firm objectives. This second factor of the Penrosean theory is vital for the productive distribution of the firm's resource base towards its growth. Penrose's views on the role of administrative organization are very consistent with those of business practices as they, too, determine the deployment of activities that assist the firm in achieving its goals and enhancing its growth.

The Penrose theory of the growth of the firm proved to be relevant to this study as its two factors of physical and human resources; and administrative organisation were linked with the two concepts, CE and business practices, explored in this study. The Penrosean theory states that firm growth is the product of an associated process of resource accumulation and administrative organisation. Meanwhile literature makes it clear that although CE and business practices are not the same, but they do, however, both result in the same outcome namely: enhanced firm growth. This then entails that both business practices and CE are essential to enhance firm growth. Furthermore, when these two concepts are implemented in complete unison, optimal firm growth can be attained.

4. METHODOLOGY

4.1 Research Design

This study made use of quantitative research to collect data by way of a survey. Mc. Closky (1969) defined survey as any procedure whereby the data is collected systematically from a population or a sample by means of a form of direct solicitation, such as questionnaires, face to face interviews or telephone interviews. Moreover, survey research is a method of that uses descriptive research to collect primary data based on verbal or written communication with a sample of respondents that is representative of the target population. This study surveyed 250 SMEs using an instrument of a well-structured questionnaire which included closed-ended and open-ended questions to gain knowledge and understanding of business practices and CE as impetuses for SME growth. The instrument was sent out for review with the purpose of indicating the validity and was approved by a panel of experts. Furthermore

exploratory research was adopted to allow the researcher to gather information in a manner that is informal and unstructured while defining and clarifying the nature of the research problem through the process of gathering preliminary information and formulating ideas on how the research problem can be tackled.

4.2   Population

Population is regarded as the totality of all subjects that conform to a set of specifications, comprising the entire group of persons that is of interest to the researcher and to whom the research results can be generalised (Bertram & Christiansen, 2014:55). The population of this study consisted of SME owners and managers in the area of Kimberley, Northern Cape.

4.3   Sampling Design and Sample Size

This study made use of non-probability sampling. Bryman and Bell (2003:100) state that the types of non-probability sampling include purposive sampling, quota sampling, snowball sampling and convenience sampling. For the purpose of this study convenience sampling was used as it is an inexpensive method that ensures sufficient numbers for a study. Additionally, the use of convenience sampling allowed the researcher increased speed regarding the data collection process and the ability to generate better accuracy of results while combating time constraints and financial limitations.

The Small Enterprise Development Agency (SEDA) database of SMEs (8000+) was used for sampling. In the opinion of Cooper and Schneider (2003: 179) sampling is the process of selecting a sample that is suitable or a segment that is representative of the population with the intention to determine the characteristics of the whole population, as such the sample size for this study consisted of 250 SME owners and managers.

4.4   Data collection and analysis

In this study, a quantitative approach was used to collect data. Additionally, various combinations of primary and secondary data were used. The primary data collection technique involved the use of a well-structured questionnaire which included closed-ended and open-ended questions using a five point Likert scale which was then completed by respondents- SME owners and managers. Thereafter, the data collected was analysed using both descriptive statistics and inferential statistics through the use of the Statistical Package for the Social Sciences (SPSS) software. The secondary data collection involved the use of existing literature, academic articles, journals, national and international research papers as a means to gain more understanding of the research problem.

5. RESULTS AND DISCUSSION

5.1 Results

The data collection process of the study was twofold which entailed the review of literature about business practices and CE and its dimensions as well an empirical analysis of the data collected from SME owners and managers using survey research by way of a questionnaire. Below is a description of the achievement of objectives for this study.

5.1.1 Achievement of Secondary Objectives

Ascertain the determinants of SME growth

This study purposed to determine SME growth through measuring three aspects of a business, namely: Sales growth, Asset growth and Employment growth. Sales growth refers to the increase in the number of activities specifically formulated to stimulate customer purchase of a particular product or service. A study conducted by Collins and Clark (2003) suggests that a positive relationship exists between business practices and SME growth, particularly sales growth. Empirically, the data findings from this study displayed (as seen in Table 1) that only 6.4% of SMEs attained 81% or more sales growth in the last three years which is a concern as sales growth plays a significant role in enhancing the growth of a business.

SMEs SALES GROWTH				
		Frequency	**Percent (%)**	**Cumulative Percent**
Valid	Less than 0% (Decreased)	4	1.6	1.6
	0-10%	44	17.6	19.2
	11-40%	122	48.8	68.0
	41-80%	64	25.6	93.6
	≥ 81%	16	6.4	100.0
	Total	250	100.00	

Table 1: Sales growth

Asset growth is another measurement that was used for growth and is defined as the escalation of resources controlled by a business from which future economic benefits are expected (Clark & Brown, 2013:2). Literature (Lipson, Mortal, & Schill, 2009:1) opines that enhancing asset growth poses numerous benefits for SMEs; one of which is the fact that businesses with comparatively higher asset growth are associated with moderately lower risk and as such it is important that SMEs place emphasis on enhancing their asset growth. However, empirically, the data findings of this study showed (as seen in Table 2) that only 2% of SMEs attained 81% or more asset growth and 1.6% of SMEs' asset growth was less than 0%

or had decreased. This indicates that a significant number of SMEs are not investing in assets and as such do not gain the benefits of asset growth.

SMEs ASSET GROWTH				
		Frequency	Percent (%)	Cumulative Percent
Valid	Less than 0% (Decreased)	4	1.6	1.6
	0-10%	75	30.0	31.6
	11-40%	83	33.2	64.8
	41-80%	83	33.2	98.0
	≥ 81%	5	2.0	100.0
	Total	250	100.00	

Table 2: Asset growth

According to literature, the upsurge in the number of persons who work for financial return or other compensation (Muhl, 2002:3) in a business refers to employment growth. Employment growth is a key indicator of labour market performance. The Business Employment Dynamics (BED) data show that SMEs account for two-thirds of jobs created (Dalton, Friesenhahn, Spletzer & Talan, 2011:3). Conversely, empirically, the data findings of this study (as seen in Table 3) indicated that the highest percentage of SMEs (34%) had employment growth of 0-10% while the highest employment growth of 81% or more was attained by a mere 3.6% of the SMEs. This is a poor reflection of the employment growth of the SMEs as they are looked to as the leading source of job creation (Schelmelter, Mauer, Börsch & Brettel, 2010). Overall, the above data findings all reiterate scholars', Herrington, Kew and Kew's (2010), findings that only approximately 1% of all newly established SMEs in South Africa are likely to grow. This then places emphasis on the importance of enhancing the growth of SME so that they can contribute to the economy more effectively.

SMEs EMPLOYMENT GROWTH				
		Frequency	Percent (%)	Cumulative Percent
Valid	Less than 0% (Decreased)	12	4.8	4.8
	0-10%	85	34.0	38.8
	11-40%	81	32.4	71.2
	41-80%	63	25.2	96.4
	≥ 81%	9	3.6	100.0
	Total	250	100.00	

Table 3: Employment growth

Verify which key business practices can enhance CE

After an extensive review of literature, six business practices were selected due to the fact they have received a noteworthy level of recognition by prior literature with respect to SME growth, namely: HRM practices, Performance Management practices, Change Management practices, Risk Management practices, Marketing practices and Networking practices. Empirically, the data findings for this study regarding the relationship between Business practices and CE showed a medium to strong relationship between Business practices and CE. Empirically, Table 4 demonstrated the results of the Multiple Regression test conducted on Business practices and the three dimensions of CE, namely: Innovation, Risk taking propensity and Pro-activeness. The results display that from all three models, the third model which encompasses Innovation, Risk taking propensity and Pro-activeness has a stronger explanatory power of 65% (.065) regarding Business practices. This is witnesses in the significant differences between the Adjusted R Square values of all three models. Furthermore, this entails that the respondents were more inclined to implement all six business practices in collaboration with CE so as to attain optimal results.

BUSINESS PRACTICES AND INNOVATION, RISK TAKING PROPENSITY AND PRO-ACTIVENESS MODEL SUMMARY				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.645[a]	0.416	**0.414**	2.6091
2	.709[b]	0.503	**0.499**	2.4129
3	.809[c]	0.654	**0.65**	2.01711
a. Predictors: (Constant), Innovation				
b. Predictors: (Constant), Innovation, Risk Taking Propensity				
c. Predictors: (Constant), Innovation, Risk Taking Propensity, Pro-activeness				

Table 4: Business practices and Innovation, Risk taking propensity and Pro-activeness

Furthermore, literature observed the relationship between specific business practices and CE dimensions, namely: risk management practices and risk-taking propensity, as seen in Table 5 where the relationship strength between Risk taking propensity and Risk management practices is displayed to be a medium to strong one with a value of 54.5% (0.545) which is significant at the value of .000. Moreover, figure 1 also displays the relationship between performance management practices and pro-activeness; and marketing practices and innovation, thus reiterating the need for SMEs to implement business practices and CE dimensions jointly so as to attain optimal growth.

COEFFICIENTS					
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1	(Constant)	B	Std. Error	Beta		
	Risk Management Practices	1.526	0.188		8.123	0
		0.524	0.052	0.545	10.15	0

Table 5: Linear Regression (Risk taking propensity)

Establish a conceptual framework showing the relationship between business practices and Corporate Entrepreneurship (CE) as initiatives to enhance SMEs growth.

The Conceptual Framework in Figure 1 linking Business Practices and CE to SME growth is based on the assumption that the collaborative implementation of Business practices (Human Resources Management practices, Performance Management practices, Change Management practices, Risk Management practices, Marketing practices and Networking practices) and CE can enhance SME growth (Sales growth, Asset growth and Employment growth). Furthermore, the Conceptual Framework linking Business Practices and CE to SME growth demonstrates the actual nexus between business practices and CE which links the key dependent (CE) and independent variables (business practices) for this research study.

An extended literature review on this topic, of business practices and CE, proved that a relationship exists between the two variables and more so, the variables prove to be positively correlated (Mustafa, Richards & Ramos, 2013:17) and intertwined. This is further reiterated by the relationship between business practices and CE (as seen in Table 6) to be a medium to strong one where less than 1% of that relationship happened by chance. Moreover, the Conceptual Framework (Figure 1) linking Business Practices and CE to SME growth displayed the relationship between specific business practices and CE dimensions, namely: risk management practices and risk-taking propensity; performance management practices and pro-activeness; and marketing practices and innovation, thus reiterating the need for SMEs to implement business practices and CE dimensions jointly so as to attain optimal growth.

CORRELATIONS: BUSINESS PRACTICES AND CORPORATE ENTREPRENEURSHIP (CE)			
		Business Practices	CE
Business Practices	Pearson Correlation	1	.696**
	Sig. (2-tailed)		0
	N	246	243
CE	Pearson Correlation	.696**	1
	Sig. (2-tailed)	0	
	N	243	247
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 6: Business practices and Corporate Entrepreneurship (CE)
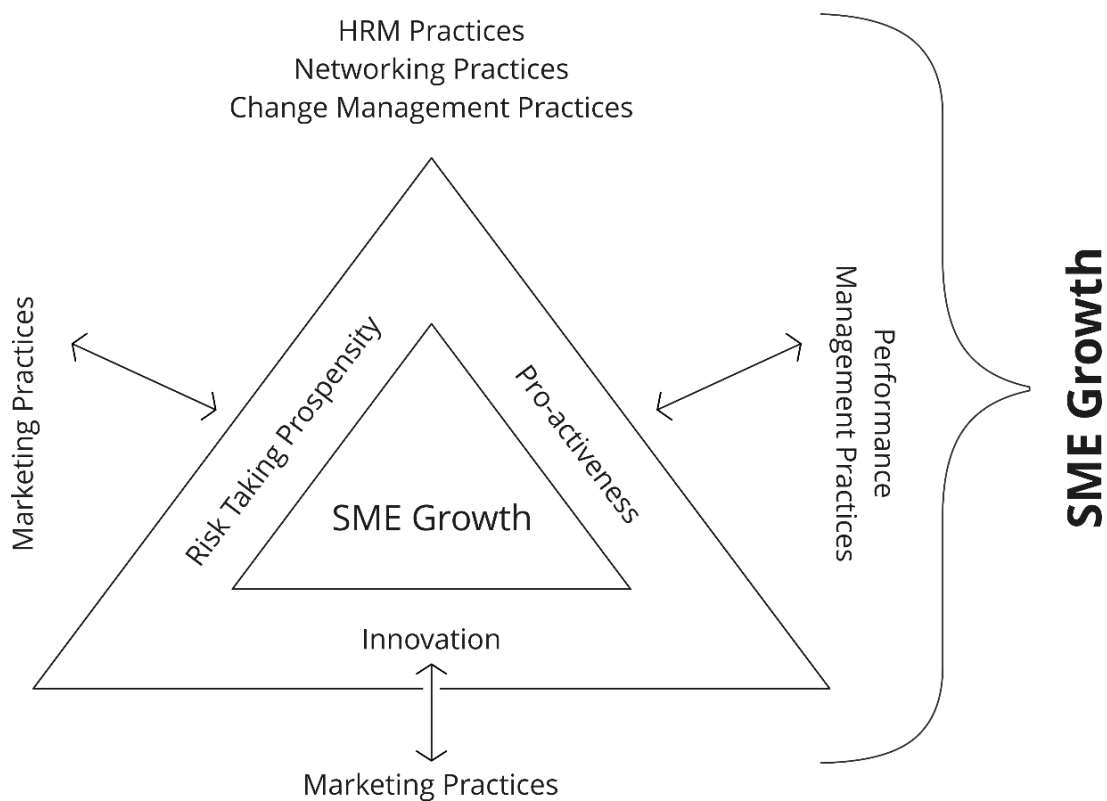
Figure 1: Conceptual Framework linking Business Practices and Corporate Entrepreneurship (CE) to SME growth

5.1.2   Achievement of Primary Objective

The primary objective of this study was to explore business practices and CE as impetuses for SME growth in Kimberley, Northern Cape. Similarly, the correct implementation of CE contributes positively to the effective engagement in business practices in SMEs. This is due to the fact that CE allows employees to have an improved understanding of the holistic goals of the business, thus helping achieve the desired outcomes efficiently. The literature

conducted on business practices and CE prove that the two concepts investigated are not the same, however they both lead to the same outcome namely: enhanced SME growth.

5.2   Discussion

In achieving the purpose of this study, which is determining the business practices that can enhance the growth of SMEs, certain growth measurements were used, namely: Sales growth, Asset growth and Employment growth. According to the Chi-Square Test conducted on Business age in relation to Sales growth, Table 7 displays the relationship between the business age and sales growth of the SMEs. The general standard used for the p-value (significant value) used in this study is 0.05. As such, the p-value in Table 7 is .000 which entails that there is less than a 1% chance that the relationship between business age and sales growth transpired by chance.

CHI-SQUARE TESTS: BUSINESS AGE AND SALES GROWTH			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	38.810a	12	.000
Likelihood Ratio	38.465	12	.000
Linear-by-Linear Association	5.544	1	0.019
N of Valid Cases	250		
a. 8 cells (40.0%) have expected count less than 5. The minimum expected count is .88.			

Table 7: Business age and Sales growth

Table 8 displays the relationship between the SMEs' business age and asset growth. The p-value from the Chi-Square Test table is .000 which entails that there is less than a 1% chance that the relationship between business age and sales growth transpired by chance.

CHI-SQUARE TESTS: BUSINESS AGE AND ASSET GROWTH			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	37.955a	12	**0**
Likelihood Ratio	40.444	12	0
Linear-by-Linear Association	4.679	1	0.031
N of Valid Cases	250		
a. 8 cells (40.0%) have expected count less than 5. The minimum expected count is .88.			

Table 8: Business age and Asset growth

The Chi-Square Test on Business age and Employment growth (Table 9) displays the relationship between the SMEs' business age and asset growth. The p-value from the Chi-

Square Test table is .003 which entails that there is less than a 1% chance that the relationship between business age and sales growth transpired by chance. As such it is concluded that a relationship exists between the business age and employment growth.

CHI-SQUARE TESTS: BUSINESS AGE AND EMPLOYMENT GROWTH			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	29.837a	12	**0.003**
Likelihood Ratio	31.343	12	0.002
Linear-by-Linear Association	5.995	1	0.014
N of Valid Cases	250		
a. 8 cells (40.0%) have expected count less than 5. The minimum expected count is 1.98.			

Table 9: Business age and Employment growth

Overall, a relationship, which was not by chance, exists between business practices and Asset growth, Sales growth and Employment growth. This is also witnessed in literature in how scholars (Machirori, 2012; Watson, 2007:852) state that the correct implementation of networking practices allows SMEs to gain access to a variety of resources they do not possess which further contributes immensely to the growth of the business. Moreover, Dizgah, Gilaninia, Alipour and Asgari (2011:494) state that the implementation of HRM practices contributes to employment growth and retention which further enhances SME growth while marketing practices help SMEs increase their market share which in turn leads to increased sales growth and enhanced SME growth (Vlachos, 2009:24).

This study purposed to explore the impetus of CE and its dimensions on the growth of SMEs. After reviewing literature, this study focused on three specific CE dimensions, namely: innovation, risk taking propensity and pro-activeness. The findings from the data collected displayed that a relationship between the two variables, CE dimensions and SME growth, existed. Literature (Aktan & Bulut, 2008) observed the correlation coefficients across four CE dimensions (pro-activeness, risk-taking, innovation, and competitive aggressiveness) and the financial performance and growth components were positive and significant.

Furthermore, this study purposed to determine which CE dimensions can be implemented in SMEs together with business practices to achieve optimal growth results. The findings displayed the relationship between specific business practices and CE dimensions, namely: risk management practices and risk taking propensity; performance management practices and pro-activeness; and marketing practices and innovation, thus reiterating the need for SMEs to implement. Furthermore, the findings for this objective, conducted through Pearson correlation, displayed a medium to strong association between the respondents' view of business practices and CE and that the Multiple Regression reiterated that this association did not occur by chance. These findings are reiterated by literature which states that the

implementation of HRM practices leads to increased entrepreneurial behaviour (Dizgah et al., 2011:494) while Performance Management practices result in an increase in innovation and creativity (Saunila, 2014:12). When these business practices are implemented together with CE dimensions the outcome is SME growth.

6.   IMPLICATIONS FOR ENTREPRENEURSHIP RESEARCH AND PRACTICE

Educational institutions

Entrepreneurial education and training is a concept that has grown rapidly in the past few years as a result of high SME failure rates. The purpose of entrepreneurial education and training is to provide students with the appropriate knowledge, skills and motivation to encourage entrepreneurial success. As a means to decrease entrepreneurial failure and enhance the growth of SMEs, it is recommended that, in their curriculum, educational institutions not only train on business practices. Rather, educational institutions should also incorporate the implementation of CE and its dimensions in the business operations as prior studies have identified CE as a viable means to attain optimal SME growth (Bojica & Fuentes, 2012; Armesh et al., 2013; Kahara-kawaki, 2011, Olughor, 2014). By educational institutions including CE in their curriculum, entrepreneurship students will become well versed in the subject of CE, its dimensions and how to implement it concurrently with business practices so as to achieve enhanced SME growth. As a result, these entrepreneurship students will be able go on to be successful entrepreneurs who operate businesses that attain optimal growth results.

Knowledge about CE as a SME growth enhancer

Prior studies and the literature in this study have proven that CE is a viable means to enhance SME growth. As such, it is important for both aspiring and practicing SME owners and managers to equip themselves with adequate knowledge regarding CE, its dimensions and its ability to enhance the growth of a business. Being well versed in the subject of CE will allow SME owners and managers to be acquainted with the benefits of implementing CE in a business and in turn allow them to capitalise fully on these benefits. In addition, SME owners and managers should also equip themselves with the necessary skills needed to effectively implement CE so as to ensure it yields optimal results.

Identify and counter weaknesses in SME

Prior studies together with literature conducted in this study have proven the importance of implementing CE in SMEs as a means to improve business profitability, cope with the entrepreneurial challenges, sustain business's competitive advantage, nurture entrepreneurial activity and ultimately enhance SME growth. However, it is also evident that a great percentage of SMEs do not currently implement CE and its dimensions in their daily

business operations. Thus, it is important for SME owners and managers to identify areas in the businesses in which CE and its dimensions are not being implemented and in turn take corrective steps regarding putting together a team that can effectively implement CE and its dimensions and assist the business in enhancing its overall growth.

Entrepreneurs' skills set to start and grow businesses

Prior to establishing SMEs, it is of paramount importance that entrepreneurs understand the importance and components of business practices and CE. Thereafter entrepreneurs should spend a significant amount of time investing in their entrepreneurial education and training as well as acquiring all the necessary skills set required to effectively establish and operate an SME successfully. By investing in their entrepreneurial education, entrepreneurs ensure that they are well equipped to establish successful businesses while making a great contribution to the wealth of the business's human capital. This contribution to human capital in turn helps ensure the high quality of the business's performance as well as the business's growth while assisting in decreasing the high failure rates of SMEs in South Africa.

Inclusion of other Business practices and CE dimensions

This study placed emphasis on six particular business practices (Human Resources Management Practices, Performance Management Practices, Change Management Practices, Risk Management Practices, Marketing Practices and Networking Practices) and three particular CE dimensions (Innovation, Risk taking propensity and Pro-activeness) as a means to enhance SME growth. However, it is highly recommended that further research be conducted on more business practices and CE dimensions and how the collective implementation of them can further help SMEs attain optimal results and in turn enhance their SME growth.

7. CONCLUSIONS

This study purposed to explore business practices and CE as impetuses of SME growth in the South African context. Through the review of literature and prior studies, the researcher identified predominant business practices that South African SMEs engage in, namely: HRM practices, Performance Management practices, Change Management practices, Risk Management practices, Marketing practices and Networking practices. These business practices proved to play a significant role in the positive performance of SMEs; however they did not address the staggering failure rates of SMEs. It is as a result of these staggering SME failure rates that the researcher looked to CE as a vehicle to enhance SME growth. The data collected by the researcher demonstrated that the implementation of CE and its dimensions (Innovation, Risk taking propensity and Pro-activeness) as a feasible means that SME owners and managers can use to enhance SME growth. However, further research substantiated that the synchronised implementation of business practices and CE leads to enhanced SME

growth as well as the decrease in SME failure rates. As such, SME owners and managers ought to select business practices that are best suited for their businesses and implement them in unison with CE and its dimensions to achieve optimal growth results.

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SINGLE AND MULTIPLE MISSING DATA IMPUTATION TECHNIQUES: A COMPARATIVE APPLICATION ON OBESITY DATA

ABSTRACT

Missing data are a common occurrence in various fields of data science and statistics. The research into missing data is one of the most important topics in applied statistics, especially in academic, government and industry-run clinical trials. However, this data loss can result in an inadequate basis for study inferences. Dealing with missing data involves neglecting or imputing unobserved values. However, the methods used to deal with the missingness in a data set may bias the results and lead to results which do not reflect a true picture of the reality under investigation in a study. This article discusses the various missing data mechanisms and how missing values can be inferred.

The main objective of this article is to evaluate the performance of several single and multiple imputation methods for a continuous dataset to find the best imputation techniques. Based on a complete survey data (2014 Lesotho Demographic Household Survey), missingness was created in the response variable (BMI) using three missing data mechanisms: missing completely at random (MCAR), missing at random (MAR) and missing not at random (MNAR). Missing values were then imputed using three single imputation methods and two multiple imputation methods, namely: mean substitution, hot-deck and regression, multiple imputation linear regression and predictive mean matching (PMM), respectively. The analysis indicated that the PMM imputation method is more precise and can also produce lower estimated standard error compared to other methods.

INTRODUCTION

Missing data are a common occurrence in various fields of data science and statistics. Research in the field of missing data is one of the most important topics in applied statistics, especially in academic, government and industry-run clinical trials. This article focuses on the performance of the three single and two multiple imputation techniques for continuous data. Having missing values in a dataset can have serious consequences in the analysis of the data. For example, Katz (2015) argues that data loss can result in an inadequate basis for study inferences. Furthermore, data loss can lead to a small sample size, damaging the precision of confidence intervals, which could bias estimates of parameters, decrease statistical power and produce high standard errors (Dong & Peng, 2013). Dong and Peng (2013) further suggest that the best way to deal with missing data is to avoid missing information in the first instance. This means that the data collector must try by all means possible to ensure that the survey questions are all answered. No matter the precautions taken, it is nevertheless difficult to collect data with no missing values. This situation gives rise to an important question regarding how missing data must be dealt with. Most researchers suggest that imputing missing data using statistical techniques is an option in dealing with missing data. These imputation techniques can largely improve data quality and various imputation techniques have thus been developed to tackle this problem. However, it is very difficult for a data scientist to identify or choose the best technique for each situation. In this study, missingness was created on a complete survey dataset from the 2014 Lesotho Demographic Household Survey in the response variable body mass index (BMI) based on three missing data mechanisms namely: missing completely at random (MCAR); missing at random (MAR); and missing not at random (MNAR). Five of eight imputation techniques, namely mean, hot-deck, regression, linear regression and predictive mean matching (PMM), were evaluated to determine the most effective technique.

During the analysis phase, researchers usually apply a technique that omits all the cases containing missing information. However, this technique is not recommended since it can lead to results which are not truly representative of the data collected (Nakagawa & Freckleton, 2008). Many studies reveal that the imputation of missing information depends on the three missing data mechanisms: MCAR, where the probability that a value is missing does not depend on missing neither observed; MAR, where the probability that a value is missing does depend only on observed; and MNAR, where the probability of an instance having a missing value for a variable could depend on the value of that variable.

Aim of the study

This study was initiated to investigate the topic of various missing data mechanisms and how missing values can be inferred. The main aim and objective of this article is to evaluate the performance of several single and multiple imputation methods for a continuous dataset on a single variable which contains missing values, in this case, BMI. In this study eight imputation

techniques are discussed, namely: mean, deductive, hot-deck, cold-deck, regression, linear regression, PMM and logistic regression methods. Five of the imputation methods are to be considered for the imputation of missing values in the dataset, namely: mean, hot-deck, regression, linear regression and PMM methods.

Factors affecting BMI level (Underweight and Obesity)

Gender, age, education, physical activities, residence type, marital status, environment factors are some of the factors appearing in the literature has potential determinants of BMI. Most researches that has been conducted have indicated that median men have higher BMI values than median women but some have got it vice-versa. The other thing is that the fatness of person usually increases with age, usually women get fatter than men. This indicates that age and gender are significant determinants of BMI. Sattar et al (2013) further argue that BMI increases with age and stop at the age of 60 and above (Sattar et al., 2013).

They further continued showing the results concerning marital status (between married and not married people) where 22.9% of married people having a BMI which is above 30 compared to 6.6% of not married people. This also indicated how marital status influences the body mass index.

Sattar et al (2013) further discussed the influence of income and residence type as a potential determinants of BMI, from their study it has shown that people who earn more are at risk of higher BMI (BMI > 30) as compared to those with low income. Results also showed that 12.9% of those who stays in rural areas have BMI less than 18.5 compared to 16.6% of those who stays in urban areas with BMI greater 30. In United States obesity likely to occur among adults from rural areas than urban areas.

In other study that was conducted to understand the drivers of overweight and obesity in developing countries, specifically in South Africa. Puoane et al. (2002) argue about South African people who don't bother about their body weight especially those in the age of 15 and above. The greater the actual body weight was, the more the self-perception deviated from the true value. They further highlighted all these wrong perceptions can be differentiated between population groups. Where women had a higher BMI than men, urban people higher than rural, old people higher than younger people, and better educated women lower than less educated women, on average (Butzlaff and Minos, 2016, Puoane et al., 2002).

Missing data Mechanism

In most statistical analyses, many assumptions are made about missing data. The assumptions are sometimes based on the three types of missing data mechanism, which are missing completely at random (MCAR), missing at random (MAR) and missing not at random (MNAR) (White et al., 2011).

Let V denote the complete data matrix with element Vik in the ith row and kth column, where i = 1,..., n and k = 1,...,M. In the presence of missing data, Vobs denote observed values of the matrix V and Vmis denote missing values. Let R denote a matrix with elements;

$$rik = \begin{cases} 1 \; if \; V_{ik} \; is \; observed \\ 0 \; if \; V_{ik} \; is \; missing \end{cases}$$

Missing completely at random

A dataset is said to be missing completely at random (MCAR) if the probability that a value is missing does not depend on neither missing nor observed values. In MCAR situation, it is assumed that each individual share the same probability of missing value (Houchens, 2015). The MCAR mathematically expression can be given by:

$$P(R|Vob,Vmis) = P(R)$$

Missing at random

A dataset is said to be missing at random (MAR) if the probability that a value is missing does depend only on observed values. The MAR mathematically expression can be given by;

$$P(R|Vob,Vmis) = P(R|Vob)$$

Missing not at random

The missing not at random (MNAR) means that the data is neither MCAR nor MAR (Houchens, 2015). Most of the researchers find this assumption as most difficult assumption to work with (Scheffer, 2002).

$$P(R|Vob,Vmis) = P(R|Vmis)$$

DATA AND METHODS

Dataset

The data used in this study were obtained from the Lesotho Demographic Household Survey 2014. The data were used to calculate several measures of nutritional status, specifically maternal height and weight questions and subsequently BMI information, which is calculated as weight in kilograms divided by height in meters squared. For this study, the focus is on the BMI of women aged 15-49. From the dataset, variable BMI (variable of interest) was categorised into three groups: those who have a BMI of less than 25 were grouped as

underweight; those with a BMI of between 25 and 35 were grouped as overweight; and the ones who have a BMI of greater than 35 were grouped as obese.

Methodology

The methodology used in this study involved three steps. The first step consisted of the creation of missing values from a complete dataset using three missing data mechanisms, namely MCAR, MAR and MNAR. The second step involved the imputation of missing data using five different techniques: mean substitution, hot-deck, regression, multiple linear regression and PMM methods. The last step consisted of evaluating and comparing the performance of the five imputation methods.

Simulation of the missing data mechanisms

Using a real dataset, cells are systematically deleted following MCAR, MAR and MNAR mechanisms following nine (9) scenarios of missingness with each scenario simulated three (3) times. The missing values under MCAR, MAR and MNAR were generated across three degrees of missingness (5%, 10%, 25%). The BMI variable was chosen to be variable of interest to experience the missingness (Hendry et al. 2017).

In the MCAR mechanism scenarios, values were remove at random across all the categories in the BMI variable. Provided the probability of missing P(Vmis) = P, for P = 0.05, 0.1 and 0.25.

To simulate the MAR mechanism, the missingness was created according to its association with 'educational attained, marital status and residence type' respectively. Data was randomly deleted from BMI variable such that P(R|no education) = 0.1, P(Primary education) = 0.1, P(R|secondary education) = 0.1, P(R|tertiary education) = 0.1, P(R|married) = 0.15, P(R|not-marrried) = 0.15, P(R|rural) = 0.15 and P(R|urban) = 0.15. These deletions were carried out for all three amount of missingness (Hendry et al. 2017).

MNAR was obtained by creating missing values where the probability of missingness is a function of the dependent variable (BMI). Deletion from the BMI variable was carried out such that P(R|bmi underweight) = 0.2, P(R|bmi overweight) = 0.2 and P(R|bmi obese) = 0.6. These deletions were repeated for the repetition for the three amount of missingness like in MAR (Hendry et al. 2017).

Summary and comparisons of the missing mechanisms and imputations

Parameter estimates resulting from the imputation techniques from all three missing data mechanisms are compared to the complete dataset results to assess bias in estimation. For a descriptive statistics perspective, allowing sampling variability, results (mean, median and standard deviation) for each of these nine scenarios were generated three times and results

were averaged and the average was compared to the one of the original dataset. To find the differences between the means, Z – test hypothesis was conducted to draw statistical inferences.

For the multivariate analysis, mean square error (MSE), R-squared and adjusted R-squared were used as the criteria comparison to see how close when compared to the results of original data. Smaller values for MSE indicate closer agreement between predicted and observed results, and an MSE of 0.0 indicates perfect agreement.

RESULTS

Descriptive analysis of the original data

The first step in analysing the data consisted of the descriptive analysis of the variable of interest, meaning BMI using the original data without any missing values. The results of this preliminary analysis are enclosed in Table 5.1.

The p-value related to the Shapiro-Wilk test for normality is greater than 0.05, which indicates that the variable BMI from original complete dataset were normally distributed. This result implies the use of mean and standard deviation tests for the summary statistics and descriptive analysis.

Table 5.1: Summary statistics for BMI in the original complete data

Summary statistics	**Original data**
Mean	24.9200
Median	24.0500
Std-dev	6.7110
IQR	7.248698
Shapiro-Wilk test	W=0.907 P-value = 0.0521

Results of the summary statistics of BMI from the original dataset show that the mean BMI is 24.92 with a standard deviation of 6.711. This results show that in general people have a healthy weight (scientifically called normal weight) because the BMI is in range 15 - 25.

Descriptive analysis of data with missing values imputed

In this section, it is a question of using descriptive statistics methods for examining which of the mean imputation, hot-deck, regression and multiple imputation techniques provide the best results and under which condition (type of missingness and percentages of missing).

Summary statistics for BMI imputed with mean imputation, hot-deck, regression and Multiple linear regression and Multiple (PMM) imputation methods.

Mean substitution technique									
Measure of central tendency	MCAR (BMI)			MAR (BMI)			MNAR (BMI)		
	5%	10%	25%	5%	10%	25%	5%	10%	25%
Mean	24.11	24.99	25.66	24.67	25.43	25.22	24.51	25.62	25.58
Median	24.29	24.23	25.26	24.64	24.24	23.97	24.17	24.75	24.32
Std-dev	7.088	7.063	7.096	7.211	7.033	7.062	7.183	7.083	7.038
Hot-deck imputation technique									
Mean	24.51	25.68	25.45	24.77	25.68	25.46	24.91	25.41	25.32
Median	24.12	24.75	24.32	24.28	24.22	24.54	24.18	24.87	24.35
Std-dev	7.215	7.166	6.996	7.153	7.306	7.168	7.021	7.684	7.112
Regression imputation technique									
Mean	24.61	25.77	25.27	25.28	25.19	25.38	24.85	25.59	25.12
Median	24.34	24.55	24.35	24.74	24.38	24.57	24.56	24.64	24.74
Std-dev	7.083	7.356	7.352	7.407	7.719	6.749	7.418	7.187	7.240
Multiple imputation (Linear regression) technique									
Mean	25.14	25.86	25.26	24.68	25.77	24.88	24.19	25.77	24.88
Median	24.34	25.11	25.42	24.34	24.38	24.38	24.28	24.78	24.81
Std-dev	7.155	7.422	7.158	6.665	6.973	7.075	6.868	7.038	7.230
Multiple (PMM) imputation technique									
Mean	23.91	25.82	24.85	24.70	25.23	24.64	24.41	24.94	24.77
Median	24.09	24.45	23.86	24.13	24.24	24.34	24.046	24.65	24.21
Std-dev	6.614	7.153	7.320	7.060	6.679	6.808	6.392	6.833	6.131

The table above includes results of descriptive analysis of BMI with missing values imputed using different techniques from different missing mechanisms. Results summarized in this table are massive and the interpretation will be on based on the mean differences between imputed data and original data.

Multivariate analysis

Multiple imputation estimates for PMM method under MNAR.
Linear regression results for BMI using PMM imputed data

PREDICTIVE MEAN MATCHING METHOD (MCAR)								
	R-squared = 0.1345 Adjusted R-squared = 0.1345 (5%) MSE = 0.555			R-squared = 0.1375 Adjusted R-squared = 0.1352 (10%) MSE = 0.425			R-squared = 0.1395 Adjusted R-squared = 0.1375 (25%) MSE = 0.365		
Covariates	Coefficients			SE			p-value		
	5%	10%	25%	5%	10%	25%	5%	10%	25%
Constant	14.26	15.254	15.405	0.826	0.862	0.901	0.000	0.000	0.000
Age	0.188	0.183	0.192	0.012	0.035	0.044	0.000	0.000	0.000
Education (ref=no education)									
Primary	4.562	3.998	4.125	0.895	0.925	1.025	0.000	0.000	0.000
Secondary	5.587	5.012	5.233	0.961	1.002	1.145	0.000	0.000	0.000
Tertiary	6.321	6.325	6.524	1.063	1.302	1.232	0.000	0.000	0.000
Marital status (ref=not married)									
Married	1.708	1.985	2.256	0.234	0.444	0.471	0.000	0.000	0.000
Residence type (ref=urban)									
urban	-0.519	-0.625	-0.640	0.235	0.352	0.410	0.027	0.029	0.04
PREDICTIVE MEAN MATCHING METHOD (MAR)									
	R-squared = 0.1235 Adjusted R-squared = 0.1225 (5%) MSE = 0.704			R-squared = 0.1261 Adjusted R-squared = 0.1251 (10%) MSE = 0.685			R-squared = 0.1295 Adjusted R-squared = 0.127 (25%) MSE = 0.698		
Covariates	Coefficients			SE			p-value		
	5%	10%	25%	5%	10%	25%	5%	10%	25%
Constant	13.93	14.025	14.302	0.905	1.025	1.063	0.000	0.000	0.000
Age	0.172	0.179	0.191	0.014	0.016	0.023	0.000	0.000	0.000
Education (ref=no education)									
Primary	4.215	4.623	4.815	0.883	0.887	0.952	0.000	0.000	0.000
Secondary	5.352	5.961	6.359	0.920	0.962	0.971	0.000	0.000	0.000
Tertiary	5.766	6.532	6.995	0.987	1.032	1.120	0.000	0.000	0.000
Marital status (ref=not married)									
Married	2.202	2.403	3.662	0.263	0.277	0.325	0.000	0.000	0.000
Residence type (ref=urban)									
urban	-0.555	-0.571	-0.590	0.269	0.286	0.333	0.040	0.052	0.071
PREDICTIVE MEAN MATCHING METHOD (MNAR)									
	R-squared = 0.1345 Adjusted R-squared = 0.1355 (5%) MSE = 0.432			R-squared = 0.1375 Adjusted R-squared = 0.1365 (10%) MSE = 0.399			R-squared = 0.1385 Adjusted R-squared = 0.1375 (25%) MSE = 0.365		
Covariates	Coefficients			SE			p-value		
	5%	10%	25%	5%	10%	25%	5%	10%	25%
Constant	13.35	13.75	13.95	0.856	0.952	1.050	0.000	0.000	0.000
Age	0.181	0.185	0.187	0.012	0.032	0.033	0.000	0.000	0.000
Education (ref=no education)									
Primary	3.986	4.106	4.220	0.926	0.983	1.056	0.000	0.000	0.000
Secondary	5.416	5.222	5.698	0.963	0.999	1.009	0.000	0.000	0.000
Tertiary	6.069	6.150	6.325	1.097	1.120	1.325	0.000	0.000	0.000
Marital status (ref=not married)									
Married	2.212	2.359	2.663	0.238	0.369	0.398	0.000	0.000	0.000
Residence type (ref=urban)									
urban	-0.540	-0.661	-0.768	0.246	0.310	0.457	0.014	0.026	0.041

Findings of linear regression model illustrated in table 5 indicates that 13.55% (adjusted R2) of the variability in BMI is explained by this model (age, education, marital status and residence type). Results of the model reveal that all the variables included in the model are statistical significant factors of BMI (P-value < 0.05).

The regression coefficient associated with age is 0.181, suggesting that a one year increase in age is associated with a 0.181 unit increase in BMI. Regarding the influence of education level

attained on BMI, results shows that people with primary, secondary and tertiary education level have 3.986, 5.416 and 6.069 respectively, higher BMI compared to those with no education. It appears that when the level of education increases, the BMI increases.

Regarding the influence of marital status on BMI, results show that BMI's are significantly different depending on marital status. Married people are likely to have 2.212 higher BMI than not-married people. Findings indicate that people who stay in urban areas are more likely to have a 0.540 lower BMI compared to those in rural areas.

DISCUSSION AND CONCLUSIONS

This research addressed two aspects, the first was the creation of missing data mechanism (MCAR, MAR and MNAR) across three degrees of missingness (5%, 10% and 25%) on dependent variable (BMI) from the original complete dataset with no missing values. A second aspect of the study was to impute the created missing values on BMI variable (variable of interest) using different types of imputation techniques. Two sets of imputation techniques, single and multiple imputation, were involved. The analysis in this study was carried out using the free software of R and STATA. For the evaluation of results, the Shapiro-Wilk test was used to check the normality from both the original complete dataset and three missing data mechanisms at three different percentages. The results of the study show that all datasets (original data, MCAR, MAR and MNAR) were normally distributed.

The main aim of this study was to find the best imputation technique by comparing the results of each imputation technique to the results of a complete dataset (original data) using explanatory and multivariate analyses. At the descriptive level, comparisons were made regarding the BMI means of five imputation methods based on three missing data mechanisms. The results show that the best imputation technique for the data that have values MNAR at 5% is the hot-deck method (meanBMI of 24.91) followed by PMM method (meanBMI = 24.85) under MAR, mean substitution, regression and multiple imputation linear regression methods being the least advantageous. At 10% and 25% missing, PMM (meanBMI = 24.94) under MNAR and Multiple imputation linear regression (meanBMI = 24.88) under both MNAR and MAR are the best imputation methods respectively. In summary, descriptive analysis results reveal that if the researcher is not aware of the missing data mechanism, then the PMM technique could be the best imputation technique to consider.

Multivariate analyses results indicated that all the variables included in the model for the original data were statistically significant determinants of BMI (P-value < 0.05). In this case, the adjusted R-squared, MSE and regression coefficients are used as the evaluation criteria. For data that had values MCAR at 5% missing, the results show that multiple imputation linear regression is the best technique followed by PMM method. At 10% and 25% missing, PMM continued proving better performance than other methods. For data that have value MAR at 5%, 10% and25%, this study recommends the use of PMM technique followed by multiple

imputation linear regression method. Finally, for the data that had values MNAR, the results show that the PMM method is the best imputation technique compared to all other methods, followed by the hot-deck. Since multivariate analysis is statistically more powerful than descriptive analysis, this study recommends the use of the PMM technique in the event that the researcher is not aware of the missing mechanism.

From the results, it is clear that there is no better technique for all types of datasets but in the case of studies related to BMI, this study proposes the use of the PMM technique for the imputation of missing values. These results also indicated that the smaller the percentage of missingness the better results can be obtained. It is suggested that the results of this study can be extended to any continuous dataset for any health-related issue, however this extension of the results needs to be undertaken with caution.

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Nyebe Mohale

STABLE CARBON ISOTOPE ANALYSES FOR RECONSTRUCTING PALEO-DIET OF MEGA-HERBIVORES AND PALEO-ENVIRONMENT OF THE KATHU REGION IN SOUTH AFRICA

INTRODUCTION

The article intends to discuss the use of stable carbon isotope analyses for understanding the changing diet of ancient herbivore fossils found in the current arid areas of the Northern Cape, with the view to reconstructing the development of the paleo environment in the region. The study is important as it aims to provide information to predict past climate change that will in turn assist in planning a response to climate change for both the present and future. A more enlightened understanding of past climate change will allow for a more positive response for possible future climate change.

The study focuses on one of the identified archaeological sites in Kathu, known as the Kathu Pan. The site is a shallow feature in the landscape that has been found to reflect traces of the Pleistocene-Holocene in layered deposits around ancient sinkholes. It contains both archaeological artefacts and fauna (mammal bones) in contexts that are notably different from those typically found in caves and therefore makes it an ideal site for this study. The availability of water over long periods in the past attracted both animals and humans, resulting in a rich accumulation of materials for study in a situation that can also be reliably dated. Additionally, the sediments preserve pollen, also attesting to environmental (vegetation) conditions, which may serve as a comparative reference for findings based on the stable carbon isotope analyses proposed in this study. The excavations conducted at Kathu pan documents distinct stratigraphic units through the Upper Pleistocene to Holocene periods. This presents opportunities for dating of cultural material that has been studied relative to other sites in the area such as Wonderwerk Cave (Chazan, 2015).

While limited information is available on the Kathu fauna and paleo-environments to date, the site seems to be important because of its age and species composition. More detailed work, in this regard has been done at Wonderwerk Cave. The findings of this study would complement the work done at the Wonderwerk Cave, as well as the findings made at Equus Cave (Lee-Thorpe & Beaumont 1994), potentially filling gaps in our knowledge of past environments and climates for the late Pleistocene period of the central interior. Importantly, Kathu has abundant mega herbivores, including species that are non-existent in the Florisbad mammal age. It also possesses traces of how herbivores became extinct towards the end of Pleistocene period, along with evidence for major ecosystem change and biodiversity loss. Study of the mega-herbivores of Kathu Pan prior to their extinction, with comparative

examples including the record for Equus Cave (where stable carbon isotope analyses have also been undertaken), would contribute to an improved understanding of the causes of that massive loss.

Sixty profile enamel samples from 14 species of different ancient mega herbivores such as, elephants, rhinos and hippos were drilled to collect powder from fossils teeth. The samples were treated and freeze dried according to routine pre-treatment methods for isotopic analysis of enamel carbonate (Sponheimer 1999). Stable isotope analysis was carried out on a Thermo Fischer Scientific Gas Bench II. The carbon isotopic analyses were nomarlised to the international standards CSS and MHS1.

This article presents a description of the Kathu Pan area and the mega-herbivore fossils collected, the use of the carbon isotope analysis for the purpose of this study, together with examples of the type of result that may be obtained.

The Kathu Pan and its paleo-mammal samples

Kathu is a complex network of archaeological and paleo-environmental sites of research interest (Beaumont & Morris 1990; Wilkins & Chazan 2012) that occur in and around the town. The locale which is the focus of this study, known as the Kathu Pan, is located about 4.5 km northwest of the town of Kathu, in the Northern Cape Province, South Africa. This part of the Northern Cape is located on South Africa's inland plateau, which consists of expansive grasslands. The inland plateau falls within the summer rainfall region, with a mean annual rainfall between 200-400 mm (Barnard et al., 1972). Changes in temperature are large; in the hottest month, January, the average temperatures is 30ºC and in the coldest month, July, temperatures can drop to below 0ºC (Humphreys and Thackeray, 1983).

Kathu Pan is a shallow depression with internal drainage and high-water table, covering an area of about 0.3 km². The pan is the remnant of infilled sinkholes that formed within calcretes of the Tertiary-aged Kalahari Group and it preserves the longest lithostratigraphic and archaeological sequence of the sites, documenting a history of human occupation at the pan through the Earlier Stone Age, Middle Stone Age, and Later Stone Age (Chazan, 2012).

The permanent availability of water in the pans contrasts to the surrounding region where such water sources are scarce today and would have been so in the past, such that the pans would have served as nuclei attracting animals and hominins (Porat et al., 2009). The pan is currently covered with some short grass species and surrounded by acacia trees.

All collected fossil tooth samples were identified by Dr. James Brink at the Florisbad Quaternary Research Station, of the National Museum in Bloemfontein, South Africa. After identification of the tooth type, the position of tooth represented and the species, the samples were measured for length of crown, width of crown and the condition of each sample

was carefully documented. Tooth samples of the 14 species of the ancient mega-herbivores fossils were identified. The species include, hippo, giraffe, rhino, elephants, guagga and multiple species of antelope.

Stable Carbon Isotope Analysis

Stable carbon isotope analysis of fossil tooth enamel is recognised as a powerful tool for reconstructing the paleo-diet and paleo-environment (Lee-Thorp and van der Merwe 1991, Koch et al., 1997, Zazzo et al., 2005). The distinct advantage of the technique is located in the fact that it reflects the foods actually consumed by an individual, or a group of individuals. The mineral fraction of enamel is a highly crystalline material and more resistant to diagenesis than bone and dentine. For this reason, it is a highly suitable material for stable isotope analysis (Lee-Thorp and van der Merwe 1991, Koch et al., 1997), because the enamel retains the isotopic signature from the mammals' diet at the time of its formation (Zazzo et al., 2005).

Sixty profile enamel samples were drilled in 1 mm increments along the growth axis to collect enamel powder. The fossil teeth were abraded in an attempt to remove secondary carbonate, sediment, as well as a thin layer of enamel, prior to collecting enamel powder for analysis. Samples were subsequently carefully drilled into, using a Dremel® Stylus™ rotary drill. The drill was purposefully equipped with a diamond drill bit and drilling proceeded at a very low speed, to avoid to damaging the fossil tooth. Approximately fifteen powder samples were collected from each tooth. Eventually, a total of 360 powder samples were collected and stored in an appropriately labelled micro centrifuge tube.

The enamel powder was first treated with 35% hydrogen peroxide for a period of 24 hours, in order to remove any organic materials. The enamel powder was then decanted and washed in distilled water, then soaked in 0.1 M acetic acid for 3 minutes and centrifuged at the maximum speed to remove any diagenetic carbonate. The sample were rinsed thrice with distilled water and centrifuged each time for 1 minute. The samples were then closed with parafilm and dried overnight at -40 °C in the freeze drier.

Stable isotope analysis was carried out on a Thermo Fischer Scientific Gas Bench II. 0.6 mg samples were loaded into the Gas Bench in the labelled vacutainers, flushed with helium, and reacted at 70 °C for a minimum of 1 hour in 100% phosphoric acid (H_3PO_4). The resultant CO_2 headspace gas was sampled, dried and separated before being introduced to the mass spectrometer for isotopic measurement. Samples were run against internal carbonate standards (CSS and MHS1) with all results reported in the standard δ notation (‰) relative to Vienna Pee Dee Belemnite (VPDB). The use of this system for fossil enamel carbonate isotopic analysis is optimal because it has an integrated chromatographic column and allows for the analysis of the gas evolved from the reaction with orthophosphoric acid 10 times instead of once as with multiflow system from Micromass (Tütken et al., 2007). Therefore, the

continuous flow offers a more sensitive discrimination and separation of gaseous compounds and removes contaminants better to produce purer CO_2 before it enters the mass spectrometer (Bocherens et al., 2009).

Expected Results and observations

Most of the sampled mega herbivores for this study are grazers, with few browsers and some mixed feeders. It is expected that the carbon isotope results will reveal a wide range of ecological variation in their diet. As an example, Equus sp are known to be a selective grazer, sometimes eating herbs, twigs, leaves, shrubs or fruit and can live in a range of habitats such as, the savannah, woodland or scrubland. While Pedetes sp (Springhare), on the other hand, are nocturnal and feed on the roots of grass, as well as seeds and even grass leaves.

It is anticipated that oxygen isotope results would differ across species, with Kobus sp. and Hippotragus sp. displaying higher values than other taxa. The reason for the latter is that they are hugely dependent on a wetter environment, as they have difficulty surviving in arid regions. C. simum (white rhino) are mostly found near standing bodies of water, as they are dependent on water for drinking and for cooling themselves.

It is therefore be expected that the C and O isotope compositions of Kathu fauna will display more mixed C3/C4 habitats. This will then be an indication that the Kathu environment previously had higher water availability, than is the case at present. In this case, one driver that could have been responsible for such an observation could have been a change in rainfall seasonality, with more year-round rainfall that essentially supported a C3/C4 mixed savannah, whereas presently the area lies in the summer rainfall zone. Another possibility is that less evaporation occurred during the dry season, which could also be achieved by multiple rainy seasons throughout the year.

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Sabata Mokae

EXCERPT FROM "AFTER HOURS"

Galeshewe Township in the morning was choc-a-bloc, a rush to get to baas who was always ready to get you replaced by another desperate jobseeker should you not arrive, or turn up late for work. Work was scarce and you held on to whatever job you had or else your children would starve. For desperate people, times were more desperate. Hunger ate people – children and parents – alive.

The place was dusty and bare. Its hope resided in the people who laughed and prayed in the midst of all the barrenness and dust. In many parts of the township, on a particular day of the week, a tractor pulling a tank would come and men in blue overalls would empty night soil buckets into the stinking tank. Naughty children called them borramantle, men who carried the stinking human waste and excrement that nobody wanted to touch. Nobody wanted to mess with them. A rumour had made the rounds that they would not hesitate to pour all the smelly stuff on your doorstep should you make fun of them, or lift your nose as though they were stinking.

Dust was also kicked up as policemen in their mellow yellows patrolled the streets day and night. You would swear these policemen, ugly as cow dung and cruel like zombies with no traceable families, shared no humanity with those they policed. Their eyes were ablaze with flames of hatred and anger. The odour from their armpits was a mixture of sewage and rotten potatoes. Even hardened men walked far away from them.

Morning conversations at the bus stop often began with what people heard on Radio Tswana. Enlightened ones in the queue often bought copies of the Diamond City Post before arriving at work. They read it before they started working in the morning or during teatime. Some read at the dinner table or before bedtime as they rested their weary bones ahead of the next gruelling day at work. These were bomabalane, the ones who worked with the pen and paper.

As for others, they would not care to know about the bus and consumer boycotts or the threats by some cabinet minister – that those who don't go to work would not get paid or that schools would be closed should the children not go back to class. No, these workers wanted to get to their jobs, do what they were ordered to do, go back home and get paid at the end of the month or fortnight, or whatever the case may be. They were simply part of the wheel that kept turning. That's all they were – good citizens. They obeyed when the white man shouted orders at them; when the white man ordered them to jump all they wanted to know was how high? They wanted no trouble. They wanted their children to have a roof over their

heads, eat, be clothed and go to school and maybe one day release the whole family from the clutches of perpetual want.

Among these good citizens was Daniel Matlholaadibona Thabeng, a dairy worker in his thirties who dropped out of high school when his father died while working at the mine owned by De Beers Consolidated Mines. At the age of eighteen he had to find work to take care of his mother and niece, his sister's daughter who died shortly after giving birth.

Daniel was in many ways a harmless fellow. He respected not only the authorities but everyone else too; he was respectful both when he was sober and when he was not. No one could say they were ever bothered, let alone provoked by him. He occasionally got angry, but he never cursed. He was the kind that never left their hometown; he was born in Galeshewe Township and chances were good that he was going to meet his first girlfriend, get married, grow old, die and be buried there.

Daniel was an obedient citizen; he waited for the leaders to get out of jail and lead him and his fellow countrymen to freedom. When residents boycotted municipal buses, he threw himself into the midst of the crowd. No police rubber bullet ever got to him. But he knew from experience how teargas burned the eyes. He woke up early from Monday to Friday to go and toil at the dairy. He took white man's punches every working day, with silent or no protest at all. He always obeyed orders and apologized for the wrongs he knew nothing about. He was grateful for the pittance he earned. It was the way of life, his late father had taught him.

In the beginning he tried attending night school to keep his dream of becoming a teacher alive. When he realized that finishing high school was too high a mountain to climb he thought he could at least pass Standard Eight and go to the police college. Still that was a dream higher than his reach. He gave up.

Since then he seldom went to bed sober. The brown bottle became his friend. "Tsala ya go tshega le go tlhonama", his mother said that was what beer was to him, a friend in need and a friend indeed. His late uncle, a minister in the Methodist Church, once told him that cheap beer was the government's way of destroying black families. He disagreed. His mother gave up trying to talk sense to him.

His first name, Matlholaadibona, meant the one who has gone through all sorts of troubles in life; and his mother, whenever she was happy, would call him "Matlho", which caused some confusion for some people, because "matlho" is the Setswana word for "eyes".

Mmathabeng prayed for her son every night and throughout each day that he would stop drinking and find the Lord. He, however, never stopped drinking and never even tried to find the Lord. Still, she never stopped praying for him; after all, he was her only son for God's sake. He was her only child who was still living at home apart from Kedi, the granddaughter whose

father she didn't know and never cared to know. "That son of the devil and the bitch," she called the man she never met.

One day when he came home from work, Daniel told his mother that Diego Da Silva, a Portuguese man who owned a restaurant in town where he delivered milk every morning, needed an extra pair hands. He thought Kedi could take up the offer and earn some kleingeld during school holidays.

"Modimo ga O he ka seatla," Daniel's mother said as she clapped her hands. God gives in mysterious ways.

Kedibone's name had nearly the same meaning as her uncle's. It meant the one who had seen it all. Her uncle, grandmother and everybody she knew called her Kedi. Being an orphan she hardly had any money to buy hair relaxer like all girls her age in the township. Her grandmother told her that she had to take up the offer so that she could afford to have things other girls had; a roll-on deodorant, sanitary pads and even an odd T-shirt.
"That piece of cloth you use when you are on your days is going to hurt you," her grandmother warned.

"Your mother died when she was still young, my child. You have to take care of yourself. We still don't know who your father is. Maybe he is dead. Maybe he lives around here and sees you every time when you go to school. Who knows? Anyway, I must shut up about that irresponsible son of the devil and the bitch. His day will come. Every dog has its day!"

Kedi had no one except the grandmother and the uncle. The grandmother's days on earth were numbered; she was well over seventy and years spent working in the potato plantations during cold winters left her with rheumatism and ill health. The uncle liked the brown bottle. He drank beer as long as he had the money to spend at the shebeen.

Some days Kedi cried. She would cry from morning until late at night. She would cry until she fell asleep. That was how she usually stopped crying – crying herself to sleep. When her tear ducts dried up she stopped crying. There was no use in crying anymore. It was then that she started singing. She would sing a sad song that nobody could make a sense of except for the fact that it was sad. She hummed that song from morning until very late at night when all other voices were quiet. Those who heard her hum the song said it could be all she was holding on to, having no mother and not knowing whether her father was dead or alive.

Kedi's grandmother was paid an old age grant every month. But it was barely enough to keep the wolf at bay for two weeks. One morning Kedi left with Daniel for town when he went to work. She was going to take up the offer to work at the Portuguese man's restaurant, if that offer was still available.

Diego da Silva was a big man. Tall and fleshy. His cheeks fresh and smooth like that of a chubby baby. He was a well-fed man. His eyes were full of life, just like his speech. He laughed and cursed with so much punch one would think fat had a thing to do with his emotions.

"Is this the niece you told me about Daniel?" Diego asked.

"Ja, meneer," he responded. Yes, Sir.

Diego looked at Kedi and extended his right hand. "I am Mister Diego da Silva. You are working for me now. You report for duty at six o'clock in the morning and leave at half-past seven at night. You hear me?"

"Ja, meneer," she said.

"No coming late, no stealing, no boyfriends. You steal, I don't call the policeman; I whip your black ass until you wet yourself."

Diego looked at Daniel and nodded. Daniel forced a smile and gave his niece a reassuring pat on the shoulder. "O tla siama, setlogolo," he said. You'll be fine, niece. He then left for the dairy.

Kedi was fifteen when she started working at Da Silva's Food Corner. Like its name, the place was owned by Da Silva, it sold fast food and was situated at the corner of two streets in the town's business district.

Her first day at work went as fast as it had started. She was introduced to three other colleagues, all of them women slightly older than she was, and she met Diego's son Emmanuel.

"Big ass girl, are you a virgin?" Emmanuel asked. Kedi almost jumped out of her skin. What kind of a question is that, she wondered. She did not respond to his question. She was shocked. Emmanuel did not press for a response either; he just laughed and walked up to this father's office, which was actually just a demarcated corner in the restaurant, spanking another worker on his way.

"Don't mind him," Catherine told Kedi. "He is just being a boy."

Kedi would have pap and gravy twice a day. Other workers told her that on a good day Diego allowed them to have pap and chicken or beef. By half-past seven that first evening her uncle was already waiting for her outside Da Silva's Food Corner, smoking one Peter Stuyvesant after another. They left after the restaurant closed, and by nine o'clock Kedi and her uncle arrived at home. The old woman had cooked pap and stew.

"Ngwanake, o tlhotse jang?" Mmathabeng asked Kedi about her first day at work.

It was a good day, she replied. It was extremely busy from around noon to almost two o'clock when people who worked in nearby offices were on lunch. She had had two meals already and taxi fare, which, she was told, Diego gave to his workers every time when Emmanuel could not take them to the township.

Kedi's first days as a restaurant worker at Da Silva's were all the same. Diego was not as scary as he had seemed on the first day. He was a good man, Kedi thought. He always asked his employees about life at home and he bought their children school uniforms at the beginning of each year and new school shoes every winter.

Kedi's duties at Da Silva's included sweeping the floor, washing the dishes, cutting potatoes to make the fries, and cutting the meat and chicken into bite-sized portions; she also had to cook rice, pap, dumplings and vegetables.

At the end of each fortnight Diego paid his workers. Whatever few rands Kedi earned she used to buy the things she needed – sanitary towels, roll-on deodorant, skin lotion and hair relaxer. These items lasted until the next school holidays when she returned to the Da Silva's to resume her duties at the restaurant. She also used her meagre salary to purchase a two-and-half kilogram packet of sugar, a packet of tea and some coffee creamer for her grandmother. This is what she did all the time while she worked during school holidays.

Once in a while Kedi would have enough to buy herself a pair of jeans or blouse at Bee Gees. Many times when she was on duty she came home with food. This was usually the leftovers; pap or rice with meat or chicken. Sometimes it was sandwiches that had not been sold after the sell-by date.

Time flew by fast and while to Kedi it felt as though she had been working at Da Silva's forever she had actually only been working there on and off for hardly a year.

One night she came home later than usual, almost at ten o'clock, and went straight to her grandmother's room. Without a word other than a brief greeting, she handed the old woman a stack of ten rand notes. Then she turned around and went to the other bedroom, the one that had become hers since Daniel moved to the outside room.

The old woman had a sense that something was not right.

"Kedi, a o a lela, ngwanake?" she asked. Are you crying?

Kedi said nothing. Her grandmother got out of bed, put something over her shoulders and followed her granddaughter to her room and found that, just as she'd suspected, indeed Kedi was crying.

"Kedi, what is wrong?" the old woman asked her granddaughter who said nothing, she just continued crying, now much more than a couple of minutes earlier.

Kedi, through her sobs, asked her grandmother to go back to bed but Mmathabeng wouldn't hear of it.

"I won't go back to sleep leaving you crying here all alone. I don't even know why you're crying. I'm going to stay here until you have cried all your tears and then you'll tell me what happened."

Eventually Kedi stopped crying, but said she would rather talk about what had upset her in the morning. The grandmother gently squeezed her hand, wiped her tear-streaked face and reluctantly retreated back to her room.

In the middle of the night, the old woman heard the sound of splashing water coming from Kedi's room.

"She must be taking a bath," the grandmother said to herself, but it dawned on her that something was amiss. "People are usually asleep during this time of the night, only witches and thieves are up and about," she muttered softly and she threw back the covers.

She got up and went to Kedi's room. The young girl was standing upright and stark-naked in the wash basin. Her hands had cupped her face and she was sobbing.

"Why are you bathing at night, my child? What's wrong?"

Kedi said something that her grandmother could barely hear.

"I can't hear you, Kedi."

It was as if the grandmother had given her permission to cry; tears flowed down her cheeks with no care at all.

Kedi's sorrow gave way to rage and her weeping turned to wailing. Clenching her fists, stomping her feet and splashing water all over the room, she moved her head up, down, backwards and forwards as if she wanted to dislodge a memory. Her breathing became heavy with all this exertion.

Her grandmother went closer, and thankfully the closer she got the more calm Kedi became. She handed the girl a blanket.

"Cover yourself, my child. Sit down and tell me what is wrong."

Kedi took a wet facecloth, wiped her face and started talking.

Her voice was weak, strained from all the crying. "He raped me," she said.

"Oh, my God! Who did what?"

"Emmanuel, grandma. Diego's son. He raped me."

"The one who usually drops you here in a red car after work?" the old woman asked.

"Yes, grandma. Daai vuil hond het my verkrag!" That dirty dog raped me!

"Modimo wa tšhwaro," the old woman called the Lord of mercy. And then all went quiet. Quiet as though everybody in the house had died at the same time. Kedi started crying again. Her grandmother cried too, her wrinkled face cupped in her hands.

Mmathabeng could not bring herself to ask Kedi for details, but Kedi tried to explain how it happened.

end of scholars research writings

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